

Report Number: 214-TRC-03-012

Safety Compliance Testing For FMVSS 214

Side Impact Protection

Indicant

Toyota Motor Corporation

2004 Lexus RX330 MPV

NHTSA Number: C45101

Transportation Research Center Inc.

10820 State Route 347

P. O. Box B-67

East Liberty, OH 43319



Test Date: September 24, 2003

Final Report: October 7, 2003

**U. S. Department Of Transportation
National Highway Traffic Safety Administration
Enforcement**

Office of Vehicle Safety Compliance

400 Seventh Street, S. W.

Room No. 6111 (NVS-220)

Washington, DC 20590

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16. Abstract This 56/28 km/h 90° Impact (Moving Deformable Barrier) Compliance Test was conducted on the subject vehicle, a 2004 Lexus RX330 MPV in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-214D-06 (except the test was conducted 8 km/h (5 mph) faster than the standard specifies) to determine FMVSS 214 Side Impact Protection compliance. This test was conducted by Transportation Research Center Inc. in East Liberty, Ohio, on September 24, 2003. The impact velocity of the Moving Deformable Barrier (MDB) was 62.0 km/h, and the ambient temperature at the struck (Driver's side) side of the target vehicle at the time of impact was 21° C. The target vehicle's post-test maximum crush was 296 mm at Level 3. The test or target vehicle's performance is given below (with FIR filter): <table border="0"> <thead> <tr> <th></th> <th><u>Front SID HIII</u></th> <th></th> <th><u>Rear SID HIII</u></th> <th></th> </tr> </thead> <tbody> <tr> <td>Left Upper Rib Acceleration:</td> <td><u>27.2</u></td> <td>g's</td> <td><u>58.2</u></td> <td>g's</td> </tr> <tr> <td>Left Lower Rib Acceleration:</td> <td><u>31.4</u></td> <td>g's</td> <td><u>53.9</u></td> <td>g's</td> </tr> <tr> <td>Lower Spine Acceleration:</td> <td><u>28.4</u></td> <td>g's</td> <td><u>45.5</u></td> <td>g's</td> </tr> <tr> <td>Thoracic Trauma Index, (TTI):</td> <td><u>29.9</u></td> <td>g's</td> <td><u>51.9</u></td> <td>g's</td> </tr> <tr> <td>Pelvis Acceleration (PEV):</td> <td><u>45.6</u></td> <td>g's</td> <td><u>66.9</u></td> <td>g's</td> </tr> </tbody> </table> The two doors on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite doors did not open during side impact event.					<u>Front SID HIII</u>		<u>Rear SID HIII</u>		Left Upper Rib Acceleration:	<u>27.2</u>	g's	<u>58.2</u>	g's	Left Lower Rib Acceleration:	<u>31.4</u>	g's	<u>53.9</u>	g's	Lower Spine Acceleration:	<u>28.4</u>	g's	<u>45.5</u>	g's	Thoracic Trauma Index, (TTI):	<u>29.9</u>	g's	<u>51.9</u>	g's	Pelvis Acceleration (PEV):	<u>45.6</u>	g's	<u>66.9</u>	g's
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Section 1

Purpose and Test Procedure

This side impact test is part of the FMVSS 214 Side Impact Protection Compliance Test Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-02-D-11114. The purpose of this test was to evaluate side impact protection in a 2004 Lexus RX330 MPV. The test was conducted in accordance with the Office of Vehicle Safety Compliance's Laboratory Test Procedure (TP-214D-06, dated July 2001) (except the test was conducted 8 km/h (5 mph) faster than the standard specifies).

Section 2

Summary of Side Impact Test

A 2004 Lexus RX330 MPV was impacted on the driver's side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the monorail at a velocity of 62.0 km/h (38.5 mph). The target vehicle was stationary and was positioned at an angle of 63° to the line of forward motion. The side impact test was conducted by Transportation Research Center Inc. in East Liberty, Ohio on September 24, 2003. Pre-test and post-test photographs of the test vehicle, the moving deformable barrier (MDB), and the side impact dummies (SID HIIIs) are included in Appendix A.

Two restrained Side Impact Dummies (SID HIIIs) were placed in the driver (Pos. #1) and left rear (Pos. #4) designated seating positions according to the instructions specified in the OVSC Side Impact Laboratory Test Procedure (TP-214D-06, dated July 2001). Both SID HIII dummies were certified prior to this test. The side impact test was documented by one real-time camera and 9 high-speed cameras. Camera locations and other pertinent camera information are included in this report.

The SID HIIIs were instrumented with the following accelerometers:

1. Head (HED) triaxial and redundant accelerometers (X, Y, and Z-directions)
2. Neck (NEK) triaxial force and moment load cells (X, Y, and Z-directions)
3. Left Upper Rib (LUR) uniaxial and redundant accelerometer (Y-direction)
4. Left Lower Rib (LLR) uniaxial and redundant accelerometer (Y-direction)
5. Lower Thoracic Spine (T₁₂) uniaxial and redundant accelerometer (Y-direction)
6. Pelvic (PEV) section uniaxial and redundant accelerometer (Y-direction)

A summary of the side impact dummy (SID HIII) configuration and verification test data can be found in Appendix C. A total of seventy-two (72) channels of data were recorded. Appendix B contains the vehicle, MDB, and dummy response data traces.

The following tables summarize the results of the test:

Injury Criteria	Front SID HIII	Rear SID HIII
TTI (g)	29.9	51.9
PEV (g)	45.6	66.9

Head Injury Criteria (HIC)

Injury Criteria	Front SID HIII	Rear SID HIII
HIC	87	301
t ₁ (ms)	44.40	53.04
t ₂ (ms)	76.72	73.28
Average Acceleration t ₁ - t ₂ (g)	23.6	46.6

HIC is as defined in FMVSS 208. The maximum time interval t₁ to t₂ is 36 ms.

Neck Injury Criteria

Maximum Values	Front SID HIII	Rear SID HIII
Neck X-axis Force (N)	-243	364
Neck Y-axis Force (N)	-193	-714
Neck Z-axis Force (N)	973	-798
Moment About X-axis (Nm) ¹	-43.5	-88.1
Moment About Y-axis (Nm)	-39.0	-35.3
Moment About Z-axis (Nm)	22.7	18.9

¹ Calculated about the occipital condyle with the following formula: $M_{occ} = M_x + 0.01778F_y$.

Data Acquisition Explanations

The vehicle's left side sill at front seat Y-axis acceleration channel, LFSYG1, exceeded full-scale at approximately 15 milliseconds and recorded no useful data afterwards. The calculated left side sill at front seat velocity, displacement, and resultant were also affected.

The vehicle's right side sill at front seat X-axis acceleration channel, RFSXG1, recorded no useful data after approximately 16 milliseconds. The calculated right side sill at front seat velocity was also affected.

Section 3

Summary of Test Results

Data Sheet 1

General Test Vehicle Parameter Data

Test Vehicle Information:

Vehicle Year/Make/Model: 2004 Lexus RX330
Vehicle Body Style/Color: MPV/Breakwater Blue Metallic VIN: JTJGA31U940011659
Vehicle NHTSA No.: C45101 Build Date: 06/03
Engine Data: 6 Cylinders; CID; 3.3 Liters; cc
Placement: - Longitudinal; or X Lateral; or - Horizontal
Transmission: 5 Speed; - Manual; X Automatic; - Overdrive
Final Drive: - RWD; X FWD; - Four-Wheel Drive
Odometer Reading: 151 mi (243 km)
Options: X A/C; X Power steering; X Pwr. brakes; X Power windows

Data From Vehicle's Tire Placard:

Tire Pressure (at capacity)* 210 kPa Front; 210 kPa Rear
Recommended Tire Size: 225/65R17
Tires on Test Vehicle: P225/65R17 Manufacturer: Michelin, Energy

Vehicle Capacity Data:

Number of Occupants: 2 Front; 3 Rear; N/A 3rd seat; 5 Total
Type of Front Seats: X Bucket; - Bench; - Split bench
Type of Front Seat Back: - Fixed; X Adjustable with - Lever or X Knob
Vehicle Max. Capacity Loading = 420 kg (A)
No. of Occupants x 68.04 kg. = 340 kg (B)
Vehicle Cargo Capacity (A-B) = 80 kg

Test Vehicle Delivered Weight With Maximum Fluids:

Left Front	=	<u>534.5</u> kg	Left Rear	=	<u>356.0</u> kg
Right Front	=	<u>484.5</u> kg	Right Rear	=	<u>366.0</u> kg
Total Front	=	<u>1019.0</u> kg	Total Rear	=	<u>722.0</u> kg
Front % of Total Weight	=	<u>58.5</u> %	Rear % of Total Weight	=	<u>41.5</u> %
Total Weight	=	<u>1741.0</u> kg			

* Tire pressure used in test.

Data Sheet 1 (continued)

General Test Vehicle Parameter Data

Calculation Of Vehicle's Target Test Weight:

Total Test Vehicle Delivered Weight With Max. Fluids = 1741 kg (A)
Maximum Cargo Carrying Capacity of Test Vehicle = 80 kg (B)
Weight of Instrumented Side Impact Dummies (2 X 84.0 kg) = 168 kg (C)
Test Vehicle Target Weight: = 1989 kg (A+B+C)

Fully Loaded Test Vehicle (UDW + 2 SID HIII s + Cargo):

Left Front	=	<u>584.5</u> kg	Left Rear	=	<u>474.5</u> kg
Right Front	=	<u>486.5</u> kg	Right Rear	=	<u>440.0</u> kg
Total Front	=	<u>1071.0</u> kg	Total Rear	=	<u>914.5</u> kg
Front % of Total Weight	=	<u>53.9</u> %	Rear % of Total Weight	=	<u>46.1</u> %
Total Weight	=	<u>1985.5</u> kg			

As Tested Weight of Test Vehicle (2 SID HIII s + Cargo + Equipment & Instrumentation):

Left Front	=	<u>572.6</u> kg	Left Rear	=	<u>463.5</u> kg
Right Front	=	<u>512.4</u> kg	Right Rear	=	<u>433.0</u> kg
Total Front	=	<u>1085.0</u> kg	Total Rear	=	<u>896.5</u> kg
Front % of Total Weight	=	<u>54.8</u> %	Rear % of Total Weight	=	<u>45.2</u> %
Total Weight	=	<u>1981.5</u> kg			

Test Vehicle Attitude (all dimensions in millimeters):

As Delivered	Fully Loaded	Ready For Test
Right Front <u>828</u>	Right Front <u>817</u>	Right Front <u>818</u>
Left Front <u>820</u>	Left Front <u>808</u>	Left Front <u>810</u>
Right Rear <u>819</u>	Right Rear <u>785</u>	Right Rear <u>792</u>
Left Rear <u>816</u>	Left Rear <u>775</u>	Left Rear <u>781</u>

Test Vehicle Wheelbase: 2715 mm

C.G. = 1227 mm rearward of front wheel centerline

Total Vehicle Length:

Right Side = 4448 mm
Left Side = 4450 mm
Centerline = 4725 mm

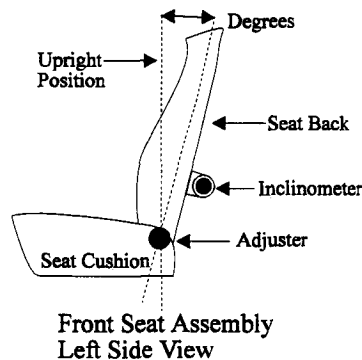
Data Sheet 1 (continued)

General Test Vehicle Parameter Data

Vehicle: 2004 Lexus RX330 MPV

NHTSA No.: C45101

Nominal Design Riding Position for adjustable driver and passenger seat backs. Please describe how to position the inclinometer to measure the seat back angle. Include description of the location of the adjustment latch detent, if applicable.



Front Seat Cushion Placement: Mid; 4.7" rearward from the foremost position

Total Length of Fore/Aft Adjustment Travel: 240 mm

Total Number of Adjustment Positions or Detents: N/A

Front Seat Back Adjustment Position: The seat back was adjusted to 87° measured at the headrest bar line

Seat Back Torso Angle: 3.3 degrees

Second Position Seat Placement: Mid; 4 notches rearward from foremost position

Total Length Of Fore/Aft Adjustment Travel: 124 mm

Seat Back Adjustment Position: The seat back was adjusted to 2 notches rearward from the most upright position

Adjustable Steering Column Position: 4 notches downward from the most upright position

Window Positions:

Right Front: Open

Right Rear: Open

Left Front: Closed

Left Rear: Closed

Note: Windows will be in closed position on struck side of test vehicle and in open position on opposite side.

Amount of Stoddard Solvent In Fuel Tank:

72.5 liters (fuel tank usable capacity)

67.6 liters used in test (92% - 94% of fuel tank usable capacity)

Location of Impact Point On Test Vehicle Side To Be Impacted:

Wheelbase = 2715 millimeters

Intended impact point is 417 millimeters rearward of front axle centerline
(which is 940 millimeters forward of the wheelbase midpoint)

Actual Impact Point is 438 millimeters rearward of front axle centerline

Data Sheet 2

Test Vehicle Summary of Results

Vehicle Year/Make/Model: 2004/Lexus/RX330

Body Style: MPV

VIN: JTJGA31U940011659

NHTSA No.: C45101

Build Date: 06/03

Test Date: 09/24/03

Vehicle Overall Length = 4725 mm

Overall Width = 1820 mm

Vehicle Test Weight (Pre-Test):

Left Front = 572.6 kg Left Rear = 463.5 kg

Right Front = 512.4 kg Right Rear = 433.0 kg

Total Front = 1085.0 kg Total Rear = 896.5 kg

Total Weight = 1981.5 kg

Wheelbase = 2715 mm

Longitudinal C.G. From Center Of Front Axle = 1227 mm

Impact Angle With Respect To Impactor = 90 degrees

Impact Point:

Actual Impact Point is 21 mm right of nominal impact ref. line (Lateral)

Actual Impact Point is 0 mm from nominal impact point (Vertical)

Maximum Exterior Static Crush:

1. Level 1 (340 mm above ground) = 85 mm

2. Level 2 (711 mm above ground) = 290 mm

3. Level 3 (750 mm above ground) = 296 mm

4. Level 4 (1080 mm above ground) = 193 mm

5. Level 5 (1630 mm above ground) = 33 mm

Maximum Post-Test Intrusion = 296 mm

Occupants:

Front Passenger

Rear Passenger

Dummy Identification 055

906

Restraints Used 3-pt. seat belt, side curtain airbag,
side torso airbag

3-pt. seat belt, side curtain airbag

Instrumentation:

Number of Vehicle Data Channels: = 21

Number of Cameras: Onboard = 3 Offboard = 8 Total = 11

Data Sheet 3

Moving Deformable Barrier(MDB) Summary

MDB Face Manufacturer And Serial Number:

Plascore, 033A0303 024A0403

Position Of Impactor (MDB) On Monorail:

Crabbed 27° to the left

MDB Specifications:

Overall Width of Framework Carriage	=	<u>1251</u>	mm
Overall Length of MDB (Incl. honeycomb impact face)	=	<u>4014</u>	mm
Wheelbase of Framework Carriage	=	<u>2591</u>	mm
Track of Framework Carriage (Front & Rear)	=	<u>1881</u>	mm
C.G. Location Rearward of Front Axle	=	<u>1138</u>	mm

MDB Weight:

Left Front	=	<u>419.6</u>	kg	Left Rear	=	<u>254.4</u>	kg
Right Front	=	<u>342.2</u>	kg	Right Rear	=	<u>342.6</u>	kg
Total Front	=	<u>761.8</u>	kg	Total Rear	=	<u>597.0</u>	kg
Total MDB Weight	=	<u>1358.8</u>	kg				

Impact Angle (MDB C/L to Target Vehicle C/L) = 90 degrees

Impact Speed = 62.0 km/h

Maximum Static Crush of Honeycomb Impact Face:

1. Row A at Center of Bumper Level	=	<u>161</u>	millimeters
2. Row B at Top of Bumper Level	=	<u>82</u>	millimeters
3. Row C at Mid Level ¹	=	<u>107</u>	millimeters
4. Row D at Top of Stack Level	=	<u>137</u>	millimeters

Instrumentation:

Number of MDB Data Channels = 5

¹ Row C at Mid Level pre-test measurements were not collected prior to impact. Pre-test measurements from a second barrier face were used to determine difference.

Data Sheet 4

Post-Test Observations

Vehicle: 2004 Lexus RX330 MPV

NHTSA No.: C45101

Visible Dummy Contact Points:

	<u>Left Front SID HIII</u>	<u>Left Rear SID HIII</u>
Head:	<u>Airbag, head restraint</u>	<u>Airbag, head liner</u>
Upper Torso:	<u>Torso airbag</u>	<u>Door panel</u>
Lower Torso:	<u>None</u>	<u>None</u>
Left Knee:	<u>Door panel</u>	<u>Door panel</u>
Right Knee:	<u>None</u>	<u>None</u>

Door Opening:

	<u>Left Side</u>	<u>Right Side</u>
Front:	<u>Jammed and latched</u>	<u>Easy</u>
Rear:	<u>Jammed and latched</u>	<u>Easy</u>

MDB Distance From Target Impact Point:

Vertical: 0 mm from target

Horizontal: 21 mm right from target

Arm Rest Locations:

Front: 240 mm below the bottom of the window

Rear: 273 mm below the bottom of the window

Seat Movement:

Front: None

Rear: None

Glazing Damage:

Windshield: _____

Window: Left rear window broken

Pillar Separation: None

Sill Separation: None

Other Notable Impact Effects:

None

Section 4

Occupant and Vehicle Information

Data Sheet 5

SID HIII Instrumentation Data

Vehicle: 2004 Lexus RX330 MPV

NHTSA No.: C45101

TEST NUMBER: 030924

DRIVER DUMMY SERIAL NUMBER: 055

POSITIVE
DIRECTION

NEGATIVE
DIRECTION

HEAD ACCELERATION

LONGITUDINAL	2.7 g	@ 205.6 ms	16.4 g	@ 62.6 ms
LATERAL	29.0 g	@ 57.0 ms	3.4 g	@ 105.6 ms
VERTICAL	10.6 g	@ 57.4 ms	5.5 g	@ 65.7 ms
RESULTANT	33.5 g	@ 57.4 ms		
HIC	87 from 44.4 to 76.7 ms			

HEAD REDUNDANT ACCELERATION

LONGITUDINAL	2.8 g	@ 206.6 ms	16.3 g	@ 62.6 ms
LATERAL	29.4 g	@ 57.0 ms	3.4 g	@ 102.2 ms
VERTICAL	10.4 g	@ 57.4 ms	5.5 g	@ 65.8 ms
RESULTANT	33.6 g	@ 57.4 ms		
HIC	88 from 44.6 to 76.7 ms			

NECK FORCE

X-AXIS SHEAR	87.3 N	@ 39.7 ms	243.2 N	@ 63.2 ms
Y-AXIS SHEAR	157.8 N	@ 62.6 ms	192.5 N	@ 94.7 ms
Z-AXIS AXIAL	973.5 N	@ 57.2 ms	91.7 N	@ 115.4 ms

NECK MOMENT

ABOUT X-AXIS	9.6 N-m	@ 151.6 ms	45.9 N-m	@ 57.9 ms
ABOUT Y-AXIS	6.9 N-m	@ 139.6 ms	39.0 N-m	@ 63.1 ms
ABOUT Z-AXIS	22.7 N-m	@ 82.2 ms	6.4 N-m	@ 297.3 ms
OCCIPITAL COND	10.6 N-m	@ 151.7 ms	43.5 N-m	@ 57.8 ms

LEFT UPPER RIB ACCELERATION

LATERAL (P)	27.2 g	@ 53.7 ms	7.3 g	@ 40.0 ms
LATERAL (R)	27.0 g	@ 53.7 ms	7.2 g	@ 40.0 ms

LEFT LOWER RIB ACCELERATION

LATERAL (P)	31.4 g	@ 16.9 ms	4.9 g	@ 78.1 ms
LATERAL (R)	31.3 g	@ 16.9 ms	5.1 g	@ 78.1 ms
TTI d (P)	29.9			
TTI d (R)	29.5			

LOWER SPINE ACCELERATION

LATERAL (P)	28.4 g	@ 43.8 ms	9.3 g	@ 57.5 ms
LATERAL (R)	27.7 g	@ 43.8 ms	5.1 g	@ 58.1 ms

PELVIS ACCELERATION

LATERAL (P)	45.6 g	@ 35.0 ms	13.7 g	@ 62.5 ms
LATERAL (R)	45.6 g	@ 35.0 ms	13.7 g	@ 62.5 ms

POSITIVE DIRECTION

LONGITUDINAL: FORWARD
LATERAL: RIGHTWARD
VERTICAL: DOWNWARD

NEGATIVE DIRECTION

LONGITUDINAL: REARWARD
LATERAL: LEFTWARD
VERTICAL: UPWARD

Data Sheet 5 (Continued)

SID HIII Instrumentation Data

Vehicle: 2004 Lexus RX330 MPV

NHTSA No.: C45101

TEST NUMBER: 030924

PASSENGER DUMMY SERIAL NUMBER: 906

POSITIVE
DIRECTION

NEGATIVE
DIRECTION

HEAD ACCELERATION

LONGITUDINAL	8.0 g	@ 203.9 ms	10.3 g	@ 70.9 ms
LATERAL	46.5 g	@ 66.1 ms	7.1 g	@ 88.6 ms
VERTICAL	16.8 g	@ 43.6 ms	39.8 g	@ 64.1 ms
RESULTANT	60.8 g	@ 64.0 ms		
HIC	301 from 53.0 to 73.3 ms			

HEAD REDUNDANT ACCELERATION

LONGITUDINAL	8.1 g	@ 206.2 ms	9.3 g	@ 71.2 ms
LATERAL	48.2 g	@ 65.7 ms	6.9 g	@ 88.2 ms
VERTICAL	16.2 g	@ 43.6 ms	38.9 g	@ 64.4 ms
RESULTANT	61.1 g	@ 64.3 ms		
HIC	310 from 53.3 to 73.1 ms			

NECK FORCE

X-AXIS SHEAR	364.3 N	@ 83.3 ms	123.1 N	@ 149.5 ms
Y-AXIS SHEAR	145.9 N	@ 153.3 ms	713.7 N	@ 80.3 ms
Z-AXIS AXIAL	682.4 N	@ 43.7 ms	798.4 N	@ 63.8 ms

NECK MOMENT

ABOUT X-AXIS	14.6 N-m	@ 83.3 ms	86.3 N-m	@ 61.4 ms
ABOUT Y-AXIS	12.2 N-m	@ 112.3 ms	35.3 N-m	@ 69.2 ms
ABOUT Z-AXIS	18.9 N-m	@ 82.5 ms	8.5 N-m	@ 243.4 ms
OCCIPITAL COND	15.4 N-m	@ 159.2 ms	88.1 N-m	@ 60.6 ms

LEFT UPPER RIB ACCELERATION

LATERAL (P)	58.2 g	@ 51.3 ms	4.0 g	@ 112.5 ms
LATERAL (R)	57.1 g	@ 51.3 ms	4.3 g	@ 112.5 ms

LEFT LOWER RIB ACCELERATION

LATERAL (P)	53.9 g	@ 50.0 ms	6.0 g	@ 76.9 ms
LATERAL (R)	52.5 g	@ 50.0 ms	5.8 g	@ 112.5 ms
TTI d (P)	51.9			
TTI d (R)	51.1			

LOWER SPINE ACCELERATION

LATERAL (P)	45.5 g	@ 40.6 ms	5.0 g	@ 73.1 ms
LATERAL (R)	45.0 g	@ 40.6 ms	4.8 g	@ 72.5 ms

PELVIS ACCELERATION

LATERAL (P)	66.9 g	@ 38.8 ms	13.9 g	@ 60.0 ms
LATERAL (R)	67.1 g	@ 38.8 ms	13.8 g	@ 60.0 ms

POSITIVE DIRECTION

LONGITUDINAL: FORWARD
LATERAL: RIGHTWARD
VERTICAL: DOWNWARD

NEGATIVE DIRECTION

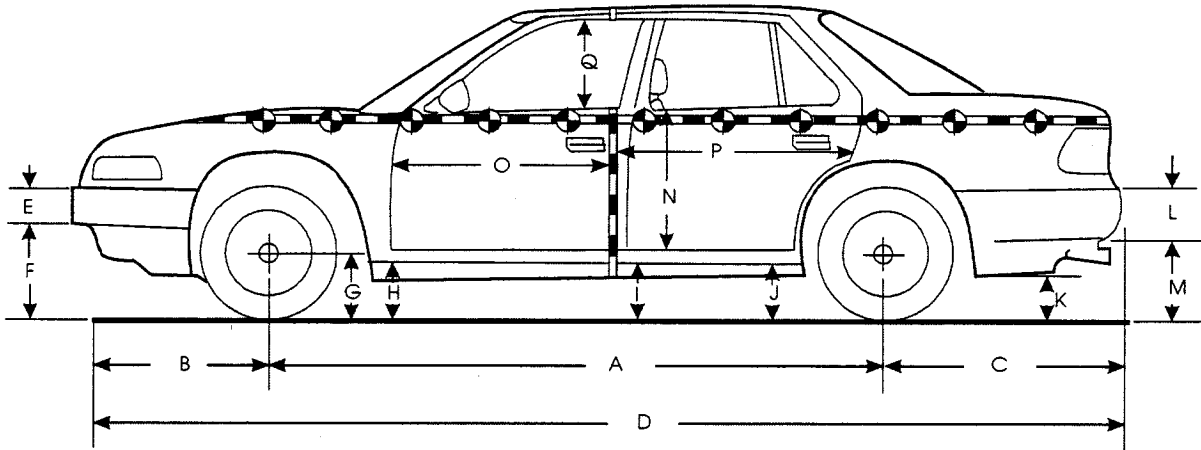
LONGITUDINAL: REARWARD
LATERAL: LEFTWARD
VERTICAL: UPWARD

Data Sheet 6

Vehicle Pre-Test And Post-Test Measurements

Vehicle: 2004 Lexus RX330 MPV

NHTSA No.: C45101



Left Side View

Note: All dimensions are in millimeters with tolerance of ± 3 mm

	Pre-Test (as delivered)	Pre-Test (as tested)	Post-Test (as tested)	Change
A	2715	2715	2700	15
B	970	970	970	0
C	1040	1040	1040	0
D	4725	4725	4726	-1
E	185	185	185	0
F	502	504	530	-26
G	340	340	340	0
H	305	330	383	-53
I	325	326	392	-66
J1	270	240	257	-17
J2	290	290	362	-72
K	360	328	319	9
L	310	310	310	0
M	420	385	378	7
N	835	835	755	80
O	784	784	730	54
P	1366	1366	1300	66
Q	460	460	460	0
R	4448	4448	4433	15
S	4450	4450	4392	58
T	1405	1405	1275	130

D = Length at centerline
T = Width at B-pillar

E&L = Bumper Thickness
J1 = To Pinch Weld

R = Right Side Length
J2 = To Sill

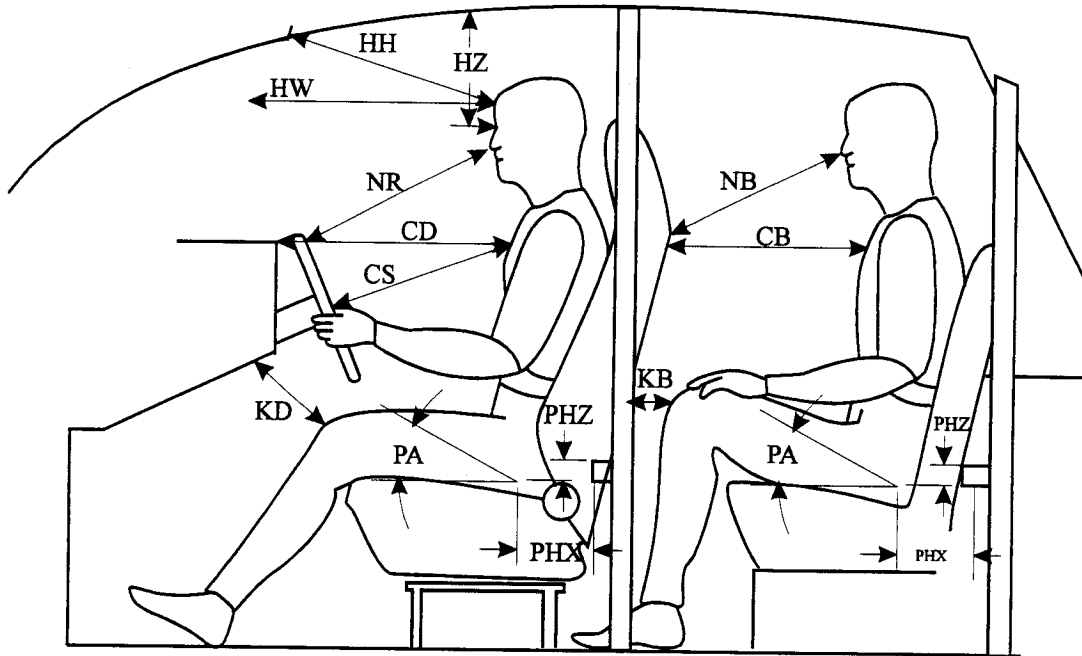
S = Left Side Length

Data Sheet 7

SID HIII Longitudinal Clearance Dimensions

Vehicle: 2004 Lexus RX330 MPV

NHTSA No.: C45101



Left Side View

Note: All measurements are in millimeters with tolerance of ± 3 mm

Measurement	Driver SID HIII # 055	Left Rear Pass. SID HIII # 906
HH	473	N/A
HW	718	N/A
HZ	190	195
NR/NB	508	663
CD/CB	603	542
CS	361	N/A
KDL(KDA°)/KBL(KBA°)	90/(66.6°)	163/(89.9°)
KDR(KDA°)/KBR(KBA°)	73/(53.0°)	173/(86.7°)
PA°	23.3°	24°
PHX	212	348
PHZ	245	342

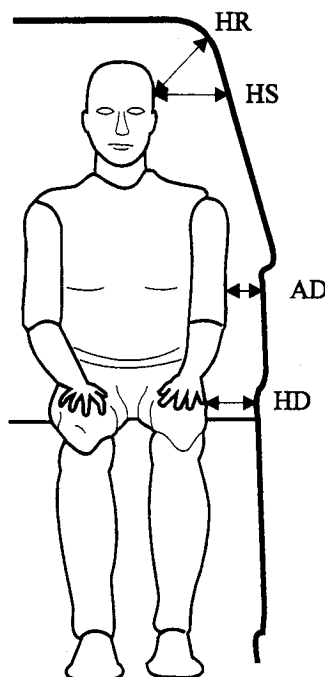
Note: 2-door vehicle shown. Rear dummy PHX and PHZ measurements for 4-door vehicle would use the C-post striker as a reference point.

Data Sheet 8

SID HIII Lateral Clearance Dimensions

Vehicle: 2004 Lexus RX330 MPV

NHTSA No.: C45101



Note: All measurements are in millimeters with tolerance of ± 3 mm

Measurement	Driver SID HIII # 55	Left Rear Pass. SID HIII # 906
HR	190	215
HS	296	334
AD*	Lower: 119 Upper: 96	Lower: 123 Upper: 101
HD	167	138

* Lower measurement is taken laterally at center of the lower rib accelerometer height from the SID HIII arm segment to the closest part of the vehicle side.

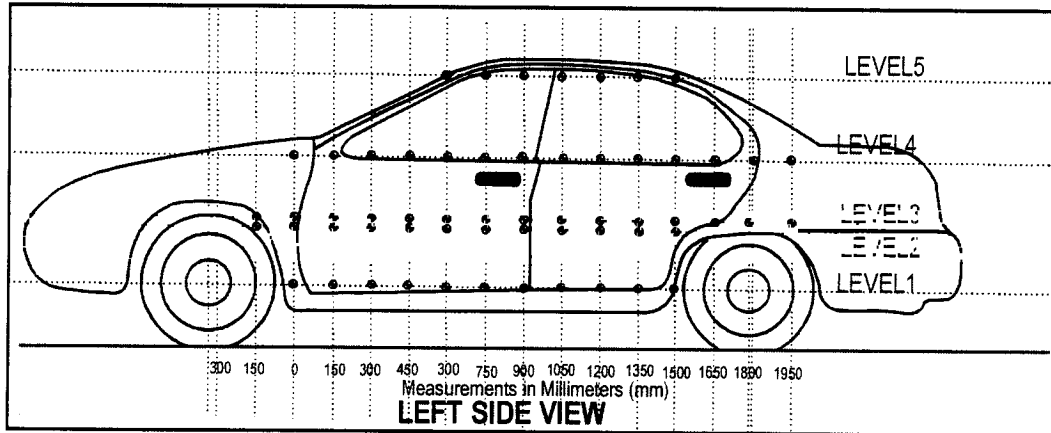
Upper measurement is taken laterally at center of the upper rib accelerometer height from the SID HIII arm segment to the closest part of the vehicle side.

Data Sheet 9

Vehicle Side Measurements

Vehicle: 2004 Lexus RX330 MPV

NHTSA No.: C45101



Level 5 - Window Top

Level 4 - Window Sill

Level 3 - Mid-Door

Level 2 - Occupant H-Point

Level 1 - Axle Centerline Height or Sill Top Height

Measurements Are Taken When The Vehicle Is In The "As Tested" Configuration.

Measurements along the vertical 750 mm line shown above:

Level 5 @ Window Top	=	<u>1630</u>	mm
Level 4 @ Window Sill	=	<u>1080</u>	mm
Level 3 @ Mid Door	=	<u>750</u>	mm
Level 2 @ Occupant H-Point	=	<u>711</u>	mm
Level 1 @ Axle Centerline Height (or Sill Top Height)	=	<u>340</u>	mm

Data Sheet 10

Vehicle Exterior Crush Profiles - All Levels

Vehicle: 2004 Lexus RX330 MPV

NHTSA No.: C45101

			(mm) From Impact Point														
Location	Height		-1200	-1050	-900	-750	-600	-450	-300	-150	0	150	300	450	600	750	
Level 1 Side Sill	340	Pre	---	---	---	---	---	---	---	---	---	659	664	665	665	664	
		Post	---	---	---	---	---	---	---	---	---	740	747	750	748	746	
		Crush	---	---	---	---	---	---	---	---	---	81	83	85	83	82	
Level 2 H-Point	711	Pre	---	664	625	600	---	---	590	---	580	596	596	587	586	585	
		Post	---	659	625	603	---	---	---	---	---	621	771	836	855	862	865
		Crush	---	-5	0	3	---	---	---	---	---	41	175	240	268	276	280
Level 3 Mid-Door	750	Pre	---	681	632	600	---	---	---	---	588	596	595	590	588	589	
		Post	---	680	634	605	---	---	---	---	---	613	767	835	857	868	876
		Crush	---	-1	2	5	---	---	---	---	---	25	171	240	267	280	287
Level 4 Window Sill	1080	Pre	---	---	---	745	720	705	691	685	670	660	652	640	635	625	
		Post	---	---	---	743	724	710	700	693	690	690	705	718	726	732	
		Crush	---	---	---	-2	4	5	9	8	20	30	53	78	91	107	
Level 5 Window Top	1630	Pre	---	---	---	---	---	---	---	---	---	---	---	---	---	905	
		Post	---	---	---	---	---	---	---	---	---	---	---	---	---	931	
		Crush	---	---	---	---	---	---	---	---	---	---	---	---	---	---	26

Data Sheet 10 (Continued)

Vehicle Exterior Crush Profiles - All Levels

NHTSA No.: C45101

Vehicle: 2004 Lexus RX330 MPV

Location	Height	(mm) From Impact Point														
		900	1050	1200	1350	1500	1650	1800	1950	2100	2250	2400	2550	2700		
Level 1 Side Sill	Pre	665	665	667	665	667	665	665	---	---	---	---	---	---		
	Post	742	743	740	737	738	740	738	---	---	---	---	---	---		
	Crush	77	78	73	72	71	75	73	---	---	---	---	---	---		
Level 2 H-Point	Pre	582	580	581	580	583	585	590	590	---	---	---	---	600		
	Post	867	862	832	869	873	871	850	710	---	---	---	---	620		
	Crush	285	282	251	289	290	286	260	120	---	---	---	---	20		
Level 3 Mid-Door	Pre	588	587	588	590	590	594	590	585	---	---	---	---	600		
	Post	877	871	843	881	886	885	849	727	---	---	---	---	620		
	Crush	289	284	255	291	296	291	259	142	---	---	---	---	20		
Level 4 Window Sill	Pre	620	615	612	610	610	610	610	602	600	621	630	639	650		
	Post	739	745	760	775	803	779	750	714	651	671	690	676	633		
	Crush	119	130	148	165	193	169	140	112	51	50	60	37	-17		
Level 5 Window Top	Pre	895	885	885	882	882	882	880	888	894	900	908	---	---		
	Post	928	911	915	915	905	901	900	899	901	906	916	---	---		
	Crush	33	26	30	33	23	19	20	11	7	6	8	---	---		

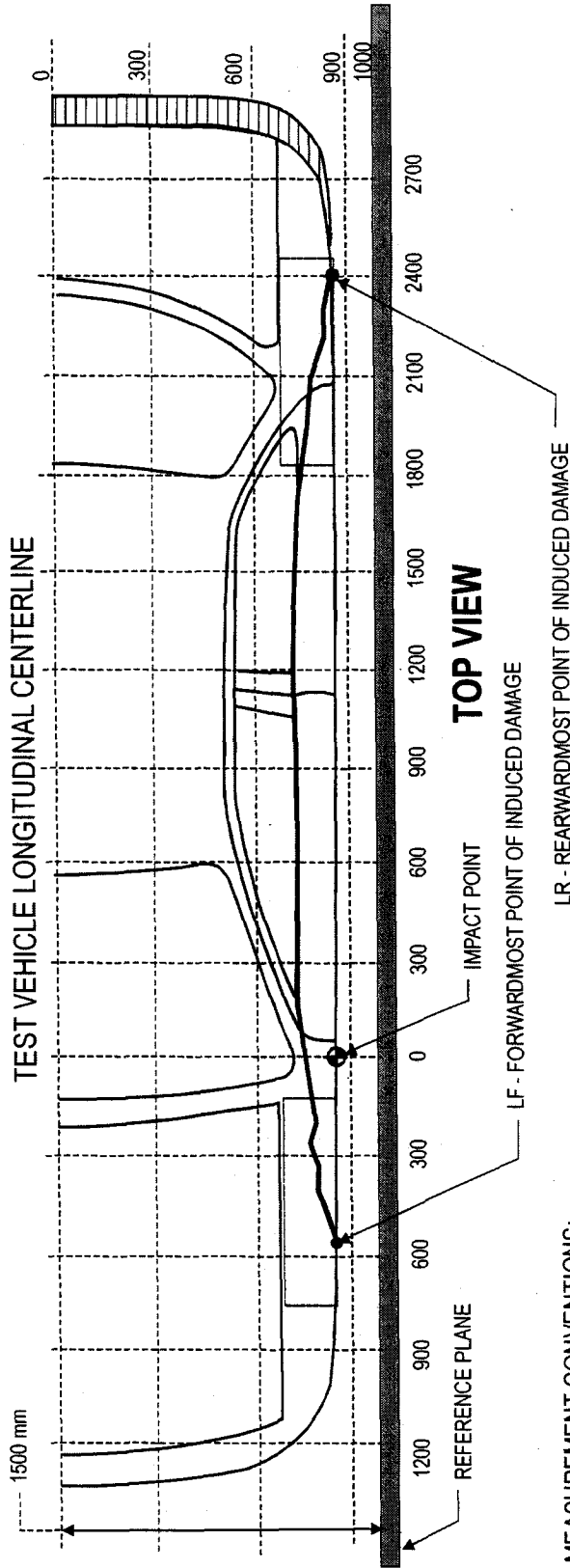
Data Sheet 11

Vehicle Damage Profile Distances

Vehicle: 2004 Lexus RX330 MPV

NHTSA No.: C45101

NOTE: All measurements are in millimeters (mm) and should be accurate to plus or minus 3mm.



MEASUREMENT CONVENTIONS:

Forward of the impact point (towards front of vehicle) is considered negative (-)

Rearward of the impact point (towards rear end of vehicle) is considered positive (+)

DPD Measurements	Post-Test (mm)	Pre-Test (mm)	Static Crush (mm)
6: LF = 0 mm (Level 2)	621	580	41
5: 600 mm (Level 3)	868	588	280
4: 900 mm (Level 3)	877	588	289
3: 1200 mm (Level 3)	846	588	258
2: 1500 mm (Level 3)	886	590	296
1: LR = 2100 mm (Level 4)	651	600	51

Full length of induced damage was 0 to 2100 mm.

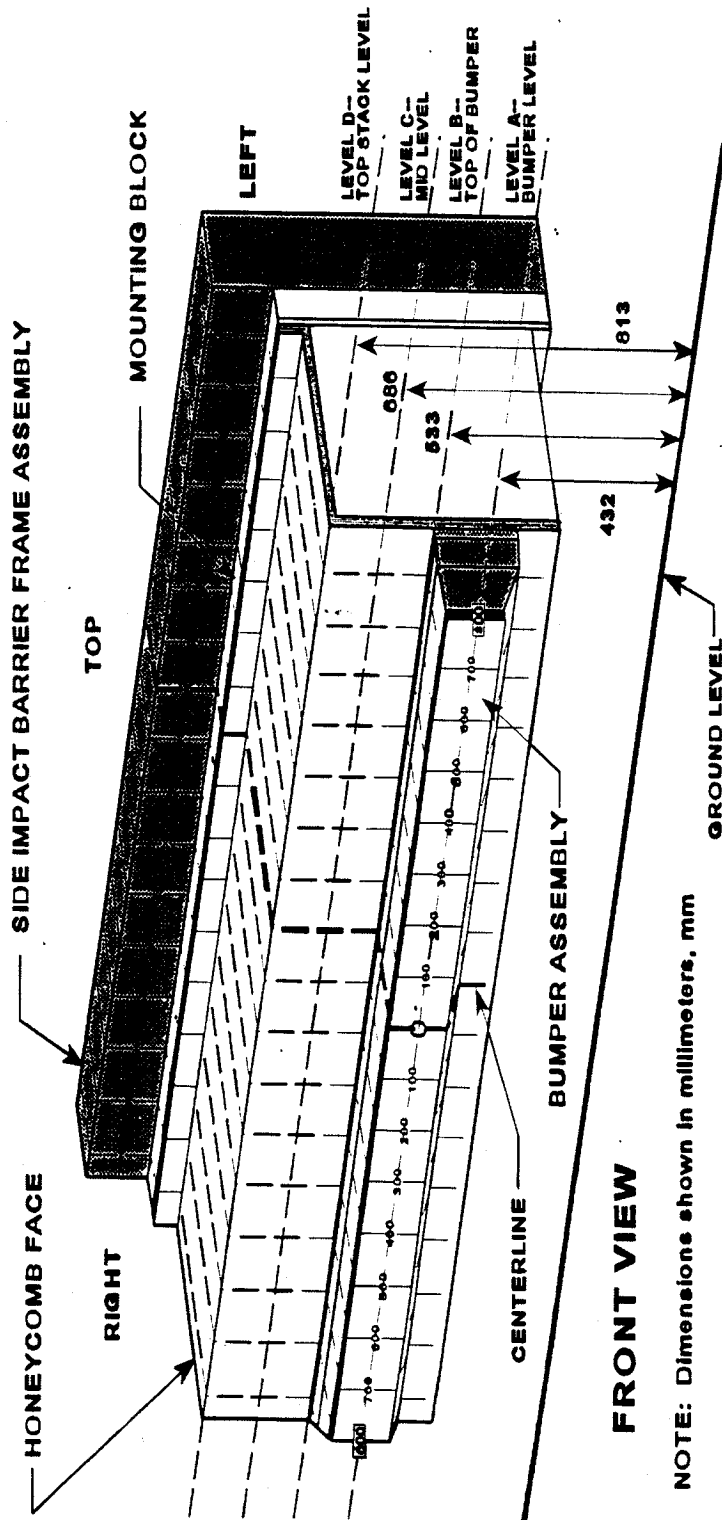
Data Sheet 12

Exterior Static Crush For Impactor Face

(Grid as looking at MDB from front)

Vehicle: 2004 Lexus RX330 MPV

NHTSA No.: C45101



FRONT VIEW

NOTE: Dimensions shown in millimeters, mm

Data Sheet 12 (Continued)
Exterior Static Crush For Impactor Face

Vehicle: 2004 Lexus RX330 MPV

NHTSA No.: C45101

		Distance Right of Center (mm)										Distance Left of Center (mm)								
Location	Height At CL	800	700	600	500	400	300	200	100	0	100	200	300	400	500	600	700	800		
Top Stack Level - Level D	811	-36	-26	-17	-16	-24	-37	-57	-52	-42	-45	-48	-51	-57	-71	-85	-93	-137		
Mid Level Level C¹	N/A	-21	-18	-14	-14	-19	-32	-53	-32	-20	-14	-14	-16	-50	-27	-42	-59	-107		
Top Bumper Level - Level B	557	-76	-72	-67	-65	-60	-59	-62	-64	-67	-68	-64	-65	-67	-69	-71	-76	-82		
Mid Bumper Level - Level A	432	-153	-161	-155	-150	-145	-144	-144	-144	-144	-146	-146	-147	-148	-149	-150	-156	-160		

All measurements are in millimeters and have a tolerance of ± 3 mm.

¹ Pre-test measurement height not recorded.

Data Sheet 12 (Continued)
Exterior Static Crush For Impactor Face

Vehicle: 2004 Lexus RX330 MPV

NIHTSA No.: C45101

Deformable Barrier Face Profile

Level D - Top Stack

Pre-Test				Post-Test				Difference			
Index	Xmm	Ymm	Zmm	Index	Xmm	Ymm	Zmm	Index	Xmm	Ymm	Zmm
1	-380	801	-45	1	-344	748	-99	1	-36	53	53
2	-380	701	-46	2	-355	650	-111	2	-26	51	65
3	-381	601	-46	3	-364	551	-117	3	-17	50	71
4	-380	500	-47	4	-365	453	-112	4	-16	48	65
5	-381	401	-46	5	-357	355	-105	5	-24	46	59
6	-381	300	-47	6	-345	256	-97	6	-37	44	51
7	-381	200	-47	7	-325	159	-98	7	-57	42	51
8	-381	100	-47	8	-330	60	-96	8	-52	40	49
9	-382	0	-48	9	-340	-38	-95	9	-42	38	47
10	-382	-100	-48	10	-337	-138	-99	10	-45	38	51
11	-382	-200	-48	11	-334	-237	-96	11	-48	37	48
12	-382	-300	-48	12	-331	-336	-88	12	-51	36	40
13	-382	-400	-48	13	-325	-434	-81	13	-57	34	33
14	-382	-500	-49	14	-311	-532	-76	14	-71	32	28
15	-382	-600	-49	15	-297	-631	-70	15	-85	31	21
16	-382	-700	-49	16	-289	-730	-60	16	-93	30	11
17	-382	-800	-49	17	-246	-817	-64	17	-137	17	15

Data Sheet 12 (Continued)

Exterior Static Crush For Impactor Face

Vehicle: 2004 Lexus RX330 MPV

NHTSA No.: C45101

Deformable Barrier Face Profile Cont'd.

Level C - Mid Level¹

Pre-Test			
Index	Xmm	Ymm	Zmm
18	-376	801	-165
19	-377	701	-165
20	-377	601	-166
21	-377	501	-167
22	-379	401	-167
23	-379	301	-168
24	-378	201	-168
25	-381	101	-169
26	-379	0	-170
27	-378	-100	-170
28	-379	-200	-171
29	-380	-299	-171
30	-381	-399	-172
31	-380	-499	-173
32	-381	-599	-174
33	-381	-700	-175
34	-382	-800	-176

Post-Test			
Index	Xmm	Ymm	Zmm
18	-354	752	-241
19	-359	655	-240
20	-363	556	-237
21	-363	456	-234
22	-360	356	-230
23	-347	257	-223
24	-326	157	-222
25	-349	57	-218
26	-359	-43	-216
27	-364	-143	-213
28	-365	-243	-210
29	-364	-343	-207
30	-361	-442	-203
31	-353	-542	-199
32	-339	-641	-193
33	-322	-739	-185
34	-275	-831	-190

Difference

Index	Xmm	Ymm	Zmm
18	-21	49	76
19	-18	46	74
20	-14	45	71
21	-14	45	67
22	-19	45	63
23	-32	44	56
24	-53	45	54
25	-32	44	49
26	-20	44	46
27	-14	43	43
28	-14	42	39
29	-16	44	36
30	-20	43	31
31	-27	43	26
32	-42	42	20
33	-59	40	10
34	-107	31	14

¹ Row C at Mid Level pre-test measurements were not collected prior to impact. Pre-test measurements from a second barrier face were used to determine difference.

Data Sheet 12 (Continued)

Exterior Static Crush For Impactor Face

Vehicle: 2004 Lexus RX330 MPV

NIITSA No.: C45101

Deformable Barrier Face Profile Cont'd.

Level B - Top of Bumper

Pre-Test

Index	Xmm	Ymm	Zmm
35	-380	800	-299
36	-381	700	-299
37	-381	599	-300
38	-381	500	-300
39	-381	400	-300
40	-381	300	-301
41	-381	200	-301
42	-382	100	-301
43	-381	0	-301
44	-382	-100	-301
45	-382	-200	-302
46	-382	-300	-302
47	-382	-400	-302
48	-383	-500	-302
49	-382	-600	-302
50	-382	-700	-302
51	-382	-800	-303

Post-Test

Index	Xmm	Ymm	Zmm
35	-305	752	-314
36	-308	651	-307
37	-314	550	-313
38	-316	450	-320
39	-321	347	-324
40	-322	254	-325
41	-319	155	-325
42	-317	56	-322
43	-314	-51	-318
44	-314	-147	-316
45	-318	-249	-309
46	-317	-349	-305
47	-315	-450	-302
48	-314	-549	-300
49	-311	-650	-297
50	-307	-750	-294
51	-300	-850	-293

Difference

Index	Xmm	Ymm	Zmm
35	-76	48	15
36	-72	49	8
37	-67	49	14
38	-65	50	20
39	-60	52	24
40	-59	46	24
41	-62	45	24
42	-64	44	21
43	-67	51	16
44	-68	47	15
45	-64	49	7
46	-65	49	4
47	-67	50	-1
48	-69	50	-3
49	-71	50	-5
50	-76	50	-8
51	-82	50	-9

Data Sheet 12 (Continued)

Exterior Static Crush For Impactor Face

Vehicle: 2004 Lexus RX330 MPV

NIITSA No.: C45101

Deformable Barrier Face Profile Cont'd.

Level A - Mid Bumper

Pre-Test

Index	Xmm	Ymm	Zmm
52	-474	798	-425
53	-484	700	-424
54	-484	601	-425
55	-485	501	-425
56	-485	400	-425
57	-485	300	-426
58	-485	201	-426
59	-485	101	-427
60	-485	0	-427
61	-485	-101	-428
62	-486	-200	-427
63	-485	-300	-428
64	-486	-400	-428
65	-486	-501	-428
66	-486	-600	-428
67	-486	-700	-429
68	-476	-799	-428

Post-Test

Index	Xmm	Ymm	Zmm
52	-321	778	-452
53	-323	649	-453
54	-330	550	-456
55	-335	450	-458
56	-340	349	-461
57	-341	249	-460
58	-341	150	-460
59	-341	50	-459
60	-341	-52	-459
61	-340	-152	-457
62	-340	-251	-456
63	-338	-351	-455
64	-338	-451	-454
65	-337	-551	-453
66	-336	-651	-451
67	-330	-751	-448
68	-316	-849	-440

Difference

Index	Xmm	Ymm	Zmm
52	-153	20	27
53	-161	52	28
54	-155	52	32
55	-150	51	34
56	-145	51	35
57	-144	51	35
58	-144	51	34
59	-144	51	32
60	-144	51	32
61	-146	51	30
62	-146	51	28
63	-147	51	27
64	-148	51	26
65	-149	51	25
66	-150	51	23
67	-156	51	19
68	-160	50	12

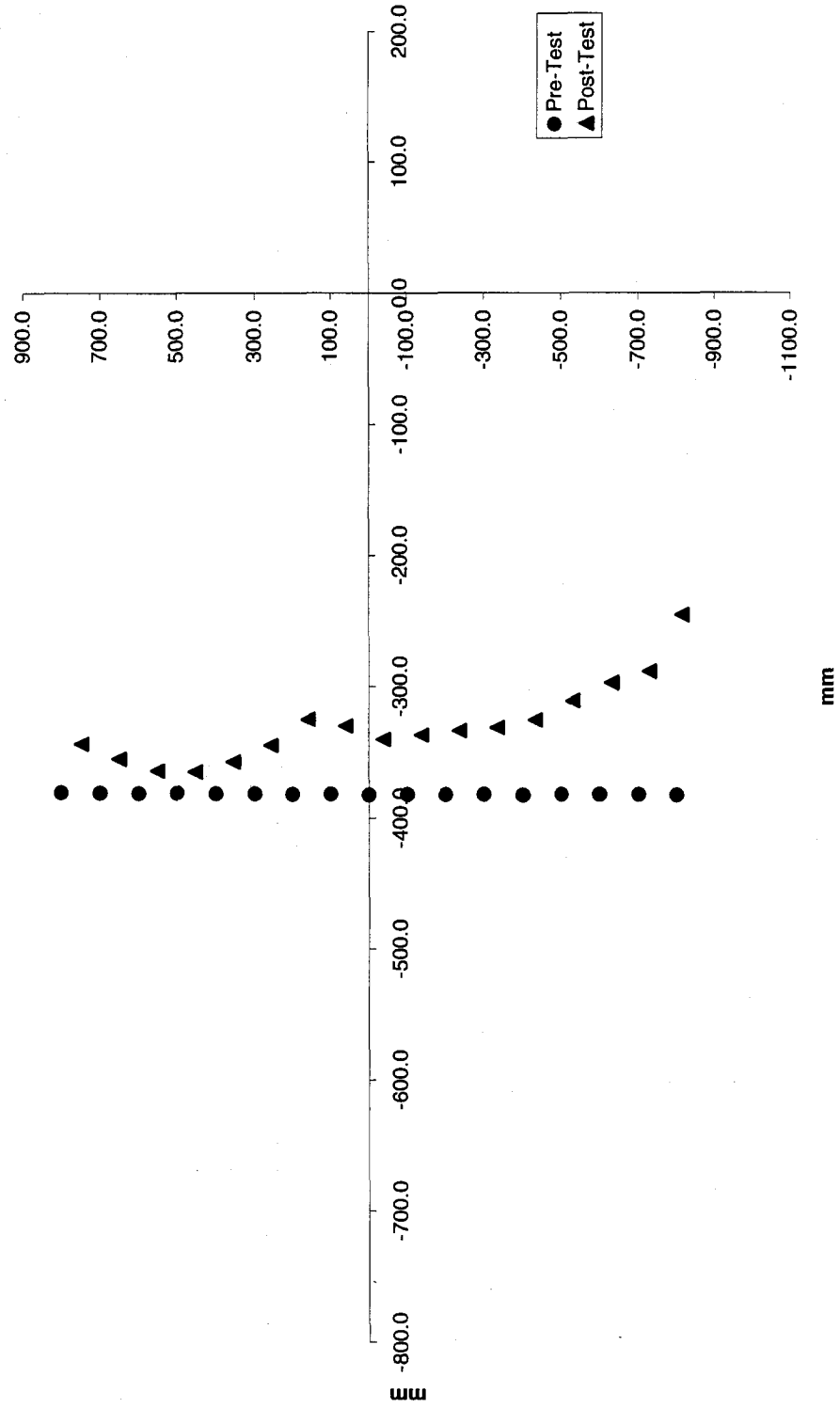
Data Sheet 12 (Continued)

Exterior Static Crush For Impactor Face

NHTSA No.: C45101

Vehicle: 2004 Lexus RX330 MPV

Level D - Deformable Barrier Face Profile 1-17



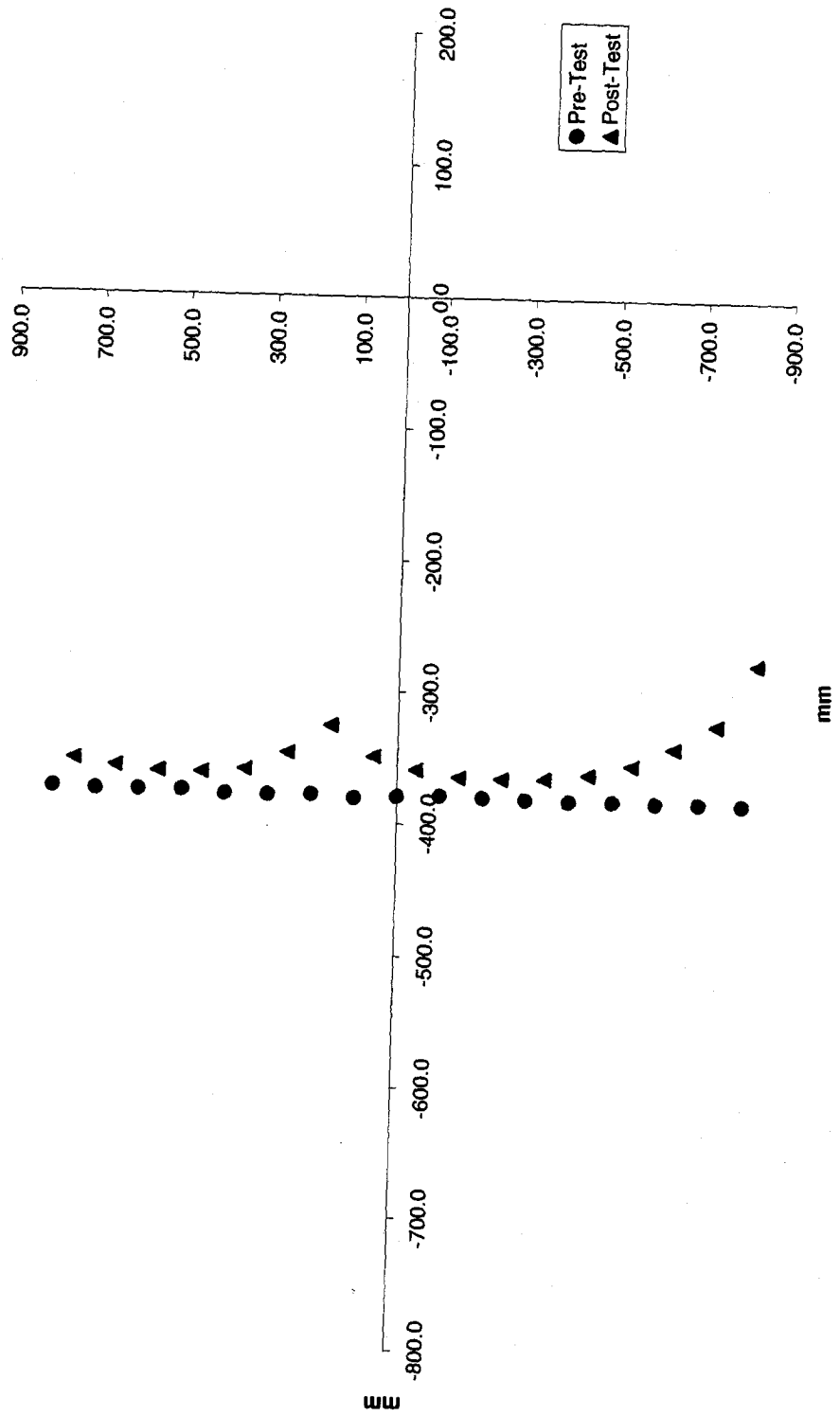
Data Sheet 12 (Continued)

Exterior Static Crush For Impactor Face

Vehicle: 2004 Lexus RX330 MPV

NHTSA No.: C45101

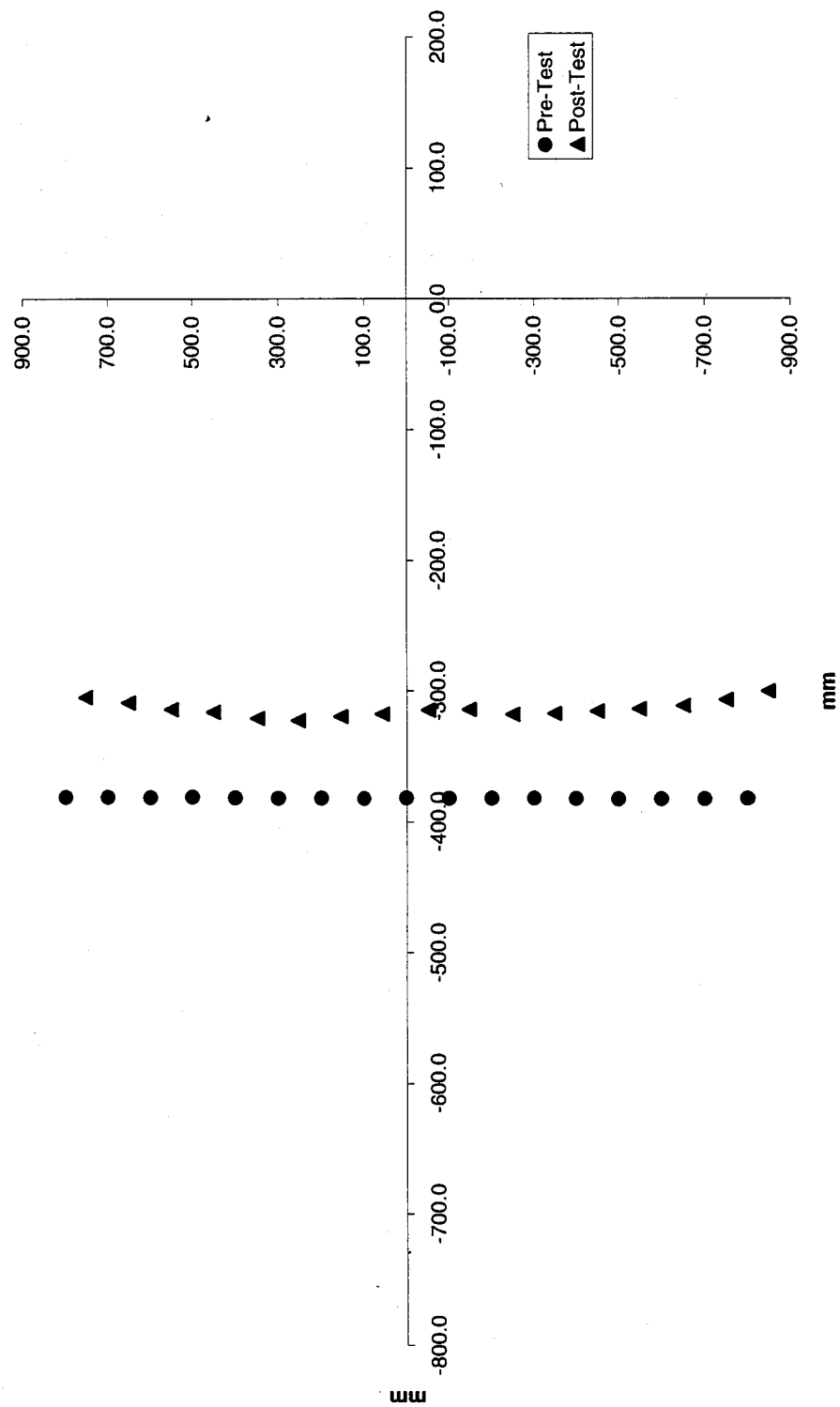
Level C - Deformable Barrier Face Profile 18-34



Exterior Static Crush For Impactor Face

NIHTSA No.: C45101

Level B - Deformable Barrier Face Profile 35-51



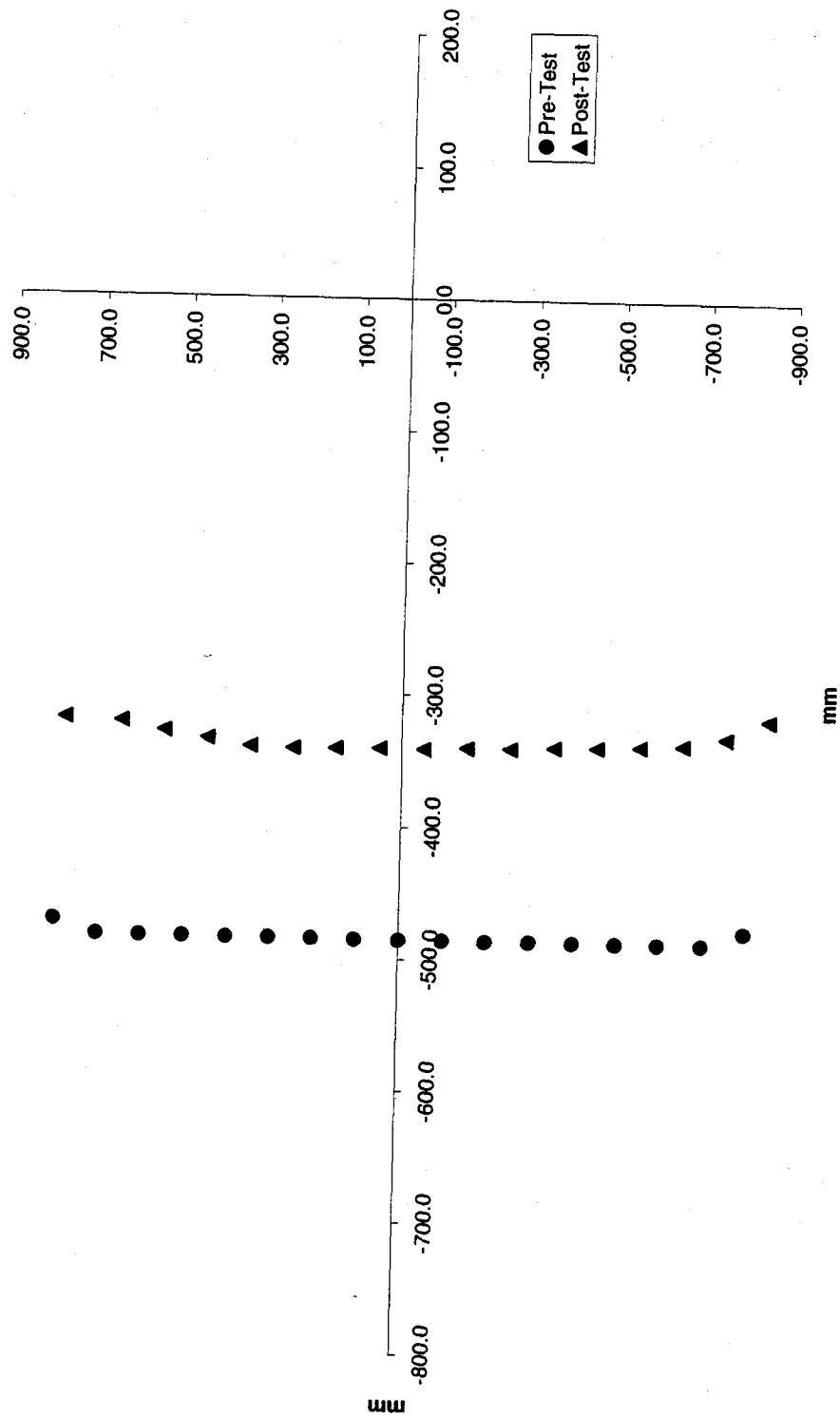
Data Sheet 12 (Continued)

Exterior Static Crush For Impactor Face

Vehicle: 2004 Lexus RX330 MPV

NIITSA No.: C45101

Level A - Deformable Barrier Face Profile 52-68

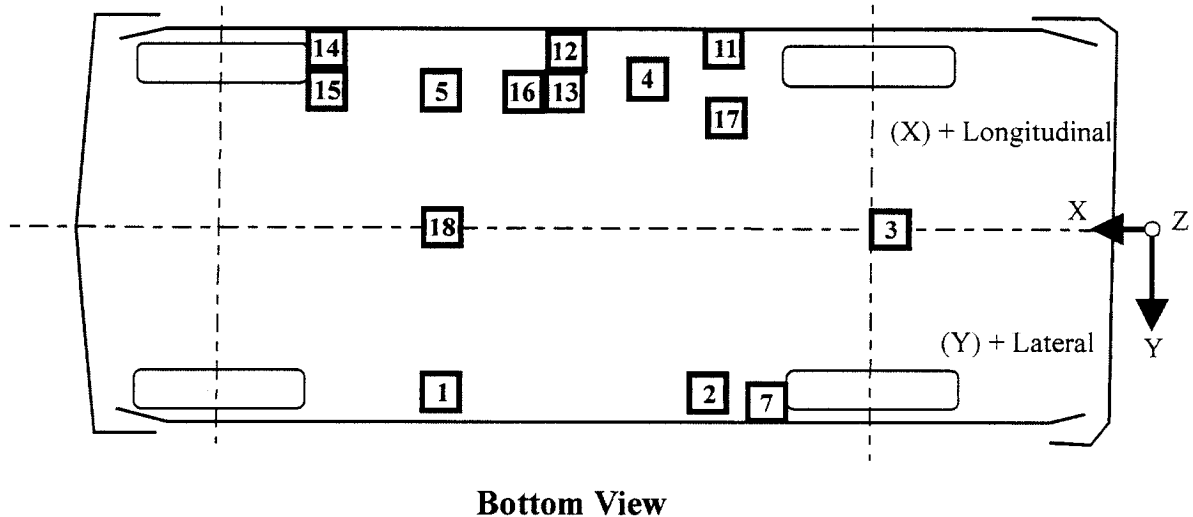
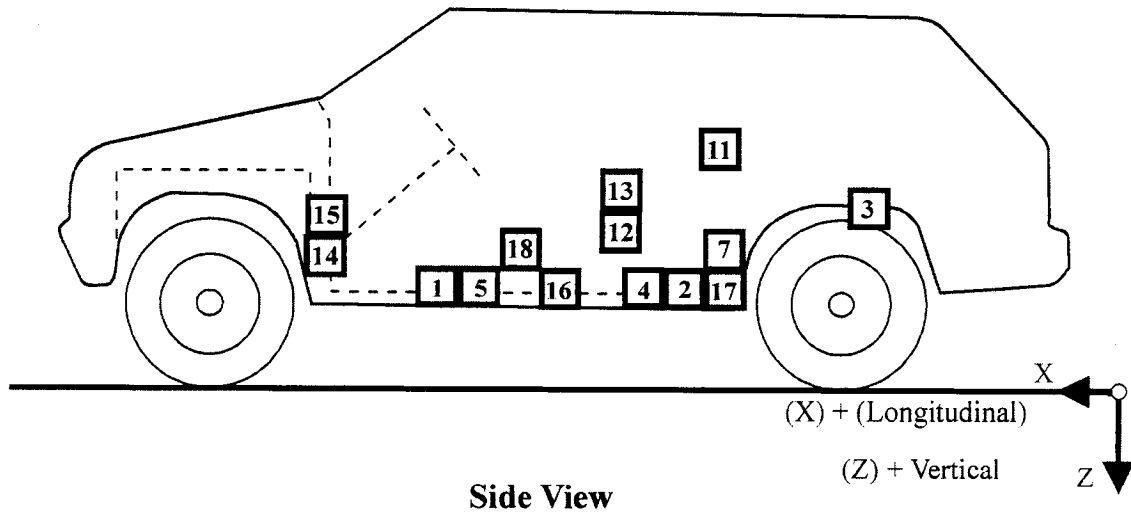


Data Sheet 13

Test Vehicle Accelerometer Locations and Data Summary

Vehicle: 2004 Lexus RX330 MPV

NHTSA No.: C45101



- | | |
|------------------------------------|--|
| 1-Right Front Side Sill | 10-Left Rear Door Mid Rear |
| 2-Right Side Sill at Rear Seat | 11-Left Rear Door Upper Centerline |
| 3-Rear Floorpan above Axle | 12-Left Side Lower B-pillar |
| 4-Left Side Sill at Rear Seat | 13-Left Side Middle B-pillar |
| 5-Left Front Side Sill | 14-Left Side Lower A-pillar |
| 6-Left Front Door on Centerline | 15-Left Side Middle A-pillar |
| 7-Right Rear Occupant Compartment | 16-Left Side Front Seat Track at H-point |
| 8-Left Front Door Mid Rear | 17-Left Rear Seat Track at H-point |
| 9-Left Front Door Upper Centerline | 18-Vehicle Center of Gravity |

Data Sheet 13 (Continued)

Test Vehicle Accelerometer Locations and Data Summary

Vehicle: 2004 Lexus RX330 MPV

NHTSA No.: C45101

TEST NUMBER: 030924
No. LOCATION

POSITIVE
DIRECTION

NEGATIVE
DIRECTION

X Y Z

1 RIGHT SIDE SILL AT FRONT SEAT LONGITUDINAL, LATERAL VERTICAL RESULTANT	3295 mm	680 mm	-400 mm	28.2 g 26.7 g 5.0 g 98.5 g	@ 251.8 ms @ 6.6 ms @ 72.1 ms @ 19.4 ms	97.6 g 2.0 g 12.4 g	@ 19.4 ms @ 281.0 ms @ 7.5 ms
2 RIGHT SIDE SILL AT REAR SEAT LONGITUDINAL LATERAL VERTICAL RESULTANT	2405 mm	680 mm	-408 mm	3.8 g 32.4 g 5.9 g 33.4 g	@ 59.8 ms @ 6.8 ms @ 139.4 ms @ 6.9 ms	6.5 g 2.1 g 11.3 g	@ 9.8 ms @ 141.4 ms @ 12.6 ms
3 REAR FLOORPAN ABOVE AXLE LONGITUDINAL LATERAL VERTICAL RESULTANT	1460 mm	0 mm	-570 mm	2.0 g 20.9 g 6.8 g 21.5 g	@ 110.9 ms @ 33.7 ms @ 44.1 ms @ 33.7 ms	6.9 g 2.3 g 6.0 g	@ 16.2 ms @ 84.2 ms @ 56.6 ms
4 LEFT SIDE SILL AT REAR SEAT LATERAL	2295 mm	-680 mm	-399 mm	38.1 g	@ 6.2 ms	46.9 g	@ 12.5 ms

Data Sheet 13 (Continued)
Test Vehicle Accelerometer Locations and Data Summary

Vehicle: 2004 Lexus RX330 MPV

NHTSA No.: C45101

TEST NUMBER: 030924 No. LOCATION	X	Y	Z	POSITIVE DIRECTION	NEGATIVE DIRECTION
5 LEFT SIDE SILL AT FRONT SEAT LATERAL ¹	3280 mm	-680 mm	-413 mm	130.0 g @ 7.0 ms	1584.6 g @ 19.5 ms
7 RIGHT REAR OCCUPANT COMPARTMENT LATERAL	2260 mm	650 mm	-430 mm	32.8 g @ 6.8 ms	2.2 g @ 140.6 ms
12 LEFT LOWER B-POST LATERAL	2628 mm	-750 mm	-665 mm	143.6 g @ 5.9 ms	78.3 g @ 18.0 ms
13 LEFT MIDDLE B-POST LATERAL	2620 mm	-750 mm	-1027 mm	114.2 g @ 7.9 ms	47.3 g @ 20.7 ms
14 LEFT LOWER A-POST LATERAL	3730 mm	-730 mm	-511 mm	40.0 g @ 2.2 ms	76.6 g @ 19.9 ms
15 LEFT MIDDLE A-POST LATERAL	3685 mm	-730 mm	-829 mm	57.0 g @ 4.4 ms	8.8 g @ 21.2 ms
16 LEFT FRONT SEAT TRACK LATERAL	2945 mm	-600 mm	-470 mm	82.3 g @ 17.5 ms	65.1 g @ 22.3 ms
17 LEFT REAR SEAT TRACK LATERAL	2015 mm	-594 mm	-369 mm	35.8 g @ 7.0 ms	29.5 g @ 20.6 ms

Data Sheet 13 (Continued)

Test Vehicle Accelerometer Locations and Data Summary

NIHSA No.: C45101

Vehicle: 2004 Lexus RX330 MPV

TEST NUMBER: 030924
No. LOCATION

POSITIVE
DIRECTION

NEGATIVE
DIRECTION

X Y Z

18 VEHICLE CENTER OF GRAVITY	3300 mm	40 mm	-415 mm			
LONGITUDINAL				3.2 g	@ 59.2 ms	8.4 g @ 12.0 ms
LATERAL				28.1 g	@ 6.5 ms	1.9 g @ 281.4 ms
VERTICAL				17.9 g	@ 17.5 ms	9.5 g @ 54.8 ms
RESULTANT				31.3 g	@ 6.4 ms	

REFERENCE: X: + FORWARD FROM REAR BUMPER
Y: + RIGHTWARD FROM VEHICLE CENTERLINE
Z: + DOWNWARD FROM GROUND LEVEL

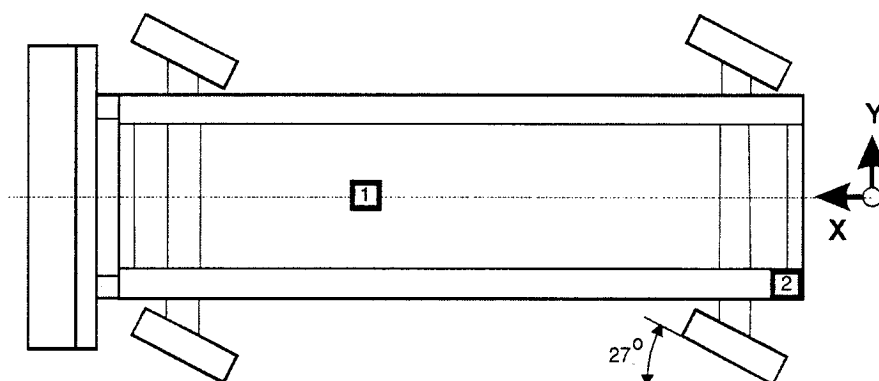
For acceleration data sign convention see Report Sign Convention in Appendix D.
1 See DATA ACQUISITION EXPLANATIONS on page 2-3

Data Sheet 14

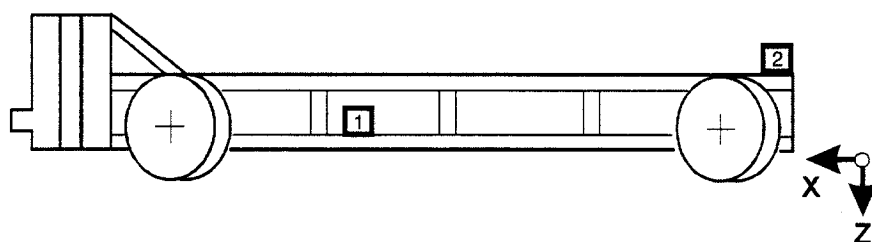
MDB Accelerometer Locations and Data Summary

Vehicle: 2004 Lexus RX330 MPV

NHTSA No.: C45101



TOP VIEW



SIDE VIEW

Accel. No.	Location	Coordinates (millimeters)			Positive Direction		Negative Direction	
		X*	Y*	Z*	Max. (g)	Time (ms)	Max. (g)	Time (ms)
1	MDB Center of Gravity	1855	0	-520				
	Longitudinal X				5.1	98.2	23.2	35.4
	Lateral Y				4.2	61.6	7.1	21.4
	Vertical Z				5.6	59.5	6.3	22.4
	Resultant R				23.7	35.4		
2	Rear Frame Member	412	-677	-625				
	Longitudinal X				2.9	119.4	25.4	35.9
	Lateral Y				2.5	14.9	2.7	58.7

*Reference: X = Rear Bumper (+ Forward)

Y = Vehicle Centerline (+ To Right)

Z = Ground Level (+ Down)

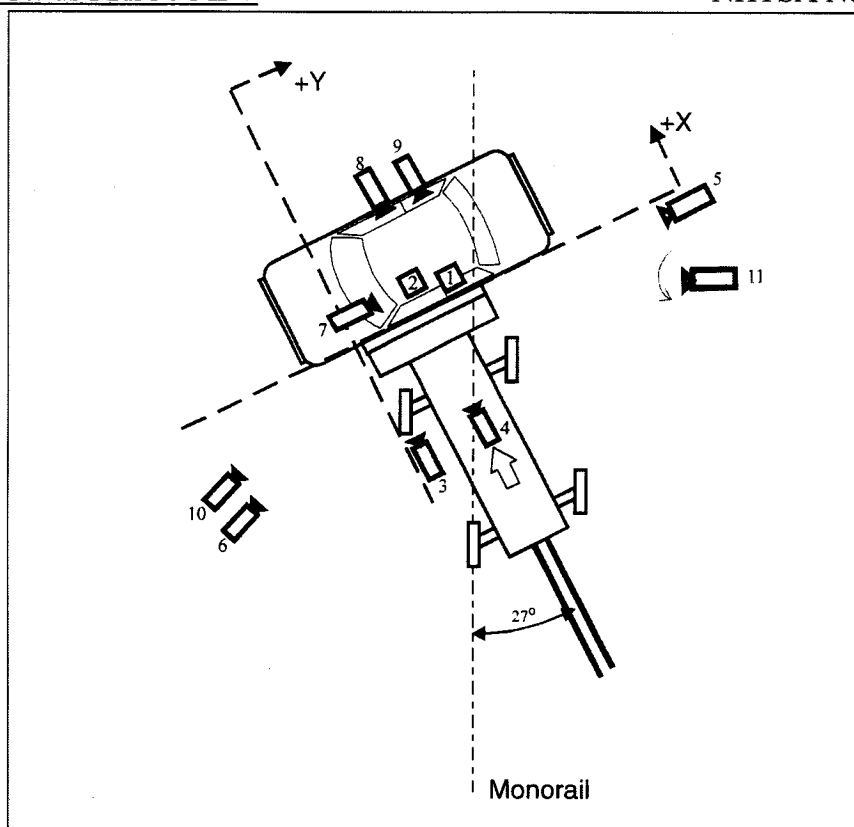
All measurements accurate to within ± 3 mm.

Data Sheet 15

High-Speed Camera Locations and Data Summary

Vehicle: 2004 Lexus RX330 MPV

NHTSA No.: C45101



Camera Number	Impact Area	Location, mm			Angle (deg.)	Lens (mm)	Speed (fps)
	Location	X	Y	Z			
1	Overhead wide	250	2150	-5750	-77.5	8.5	350
2	Overhead tight	370	1800	-5750	-85.5	17	955
3	Onboard MDB left side	-1750	-40	-720	-0.5	13	1000
4	Onboard MDB center	-2480	830	-1353	-5.2	25	997
5	Right side of MDB	-670	10550	-1180	0.7	13	1000
6	Left side of MDB	3100	-4250	-1030	1.4	13	870
7	Onboard vehicle front	540	-460	-1450	9.7	13	680
8	Onboard side front door	-1770	770	-1220	0.8	8	N/A ¹
9	Onboard side rear door	-1770	1670	-1270	-2.3	8	N/A ¹
10	Digital overall event	2950	-4500	-953	1.5	13	1000
11	Real-time Panning-Video	N/A	N/A	N/A	N/A	Zoom	30

+X: Forward (referenced to MDB) from impact point

+Y: Rightward (referenced to MDB) from impact point

+Z: Downward from ground level

¹ Camera ran too slow to time.

Section 5

Vehicle Fuel System Integrity

Data Sheet 16

FMVSS 301 Fuel System Integrity Data

NHTSA No.: C45101

Test Date: 09/24/03

Vehicle Year/Make/Model/Body Style: 2004 Lexus RX330 MPV

Test Vehicle Impact Type : ☐ Frontal (48.28 km/h)
 ☐ Oblique (48.28 km/h) with ____° barrier face
 first contacting the (driver/passenger) side
 ☐ Rear Moving Barrier (48.28 km/h)
 ☐ Lateral Moving Barrier (32.19 km/h)
 ☒ Side Impact Moving Deformable Barrier (62.0
 km/h) contacting the Driver's side__ side

Fuel Spillage Measurement:

1. From impact until vehicle motion ceases
2. For five-minute period after vehicle motion ceases
3. For next 25 minutes.

Actual	Maximum Allowed
0 g	28 g
0 g	142 g
0 g	28 g/1 minute

Solvent Spillage Details :

None

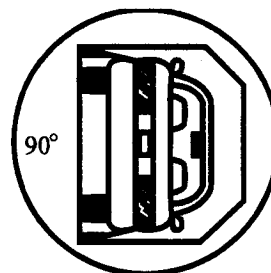
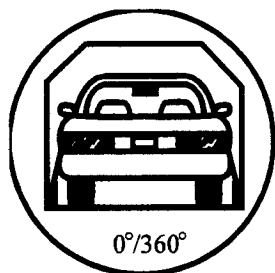
Data Sheet 17

FMVSS 301 Rollover Data

Vehicle: 2004 Lexus RX330 MPV

NHTSA No.: C45101

0 - 90 Degrees



1. Determination of Solvent Collection Time Period:

Rollover Fixture 90° Rotation Time 1 minutes 30 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + 5 minutes 0 seconds

Total 6 minutes 30 seconds

Next whole minute interval 7 minutes

2. FMVSS 301 Requirements:

(1) Time Period

First 5 minutes from onset of rotation	6th min.	7th min.	8th min. (if required)
--	----------	----------	------------------------

(2) Maximum Allowable Solvent Spillage

142 g	28 g	28 g	28 g
-------	------	------	------

3. Actual Test Vehicle Solvent Spillage:

0 g	0 g	0 g	N/A
-----	-----	-----	-----

Note: Record spillage for whole minute intervals only as determined above.

4. Solvent Spillage Location(s):

None

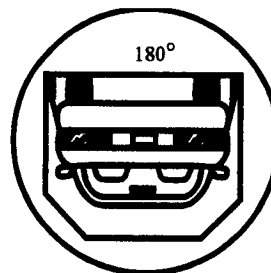
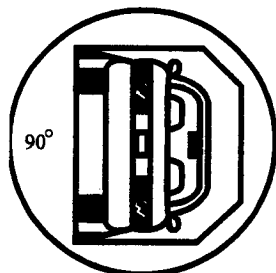
Data Sheet 17 (Continued)

FMVSS 301 Rollover Data

Vehicle: 2004 Lexus RX330 MPV

NHTSA No.: C45101

90 - 180 Degrees



1. Determination of Solvent Collection Time Period:

Rollover Fixture 90° Rotation Time 1 minutes 30 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + 5 minutes 0 seconds

Total 6 minutes 30 seconds

Next whole minute interval 7 minutes

2. FMVSS 301 Requirements:

(1) Time Period

First 5 minutes from onset of rotation	6th min.	7th min.	8th min. (if required)
--	----------	----------	------------------------

(2) Maximum Allowable Solvent Spillage

142 g	28 g	28 g	28 g
-------	------	------	------

3. Actual Test Vehicle Solvent Spillage:

0 g	0 g	0 g	N/A
-----	-----	-----	-----

Note: Record spillage for whole minute intervals only as determined above.

4. Solvent Spillage Location(s):

None

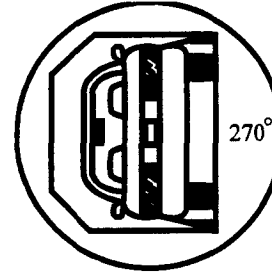
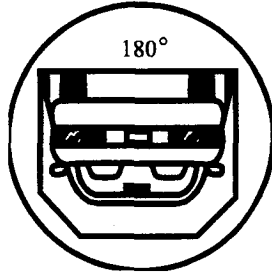
Data Sheet 17 (Continued)

FMVSS 301 Rollover Data

Vehicle: 2004 Lexus RX330 MPV

NHTSA No.: C45101

180 - 270 Degrees



1. Determination of Solvent Collection Time Period:

Rollover Fixture 90° Rotation Time 1 minutes 30 seconds
(Spec. Range = 1 to 3 minutes)
FMVSS 301 Position Hold Time + 5 minutes 0 seconds
Total 6 minutes 30 seconds
Next whole minute interval 7 minutes

2. FMVSS 301 Requirements:

(1) Time Period

First 5 minutes from onset of rotation	6th min.	7th min.	8th min. (if required)
--	----------	----------	------------------------

(2) Maximum Allowable Solvent Spillage

142 g	28 g	28 g	28 g
-------	------	------	------

3. Actual Test Vehicle Solvent Spillage:

0 g	0 g	0 g	N/A
-----	-----	-----	-----

Note: Record spillage for whole minute intervals only as determined above.

4. Solvent Spillage Location(s):

None

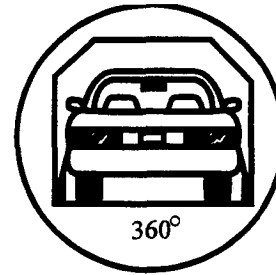
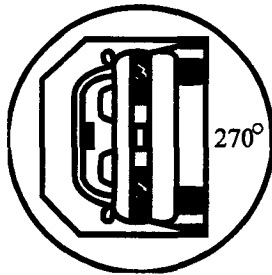
Data Sheet 17 (Continued)

FMVSS 301 Rollover Data

Vehicle: 2004 Lexus RX330 MPV

NHTSA No.: C45101

270 - 360 Degrees



1. Determination Of Solvent Collection Time Period:

Rollover Fixture 90° Rotation Time 1 minutes 30 seconds
(Spec. Range = 1 to 3 minutes)
FMVSS 301 Position Hold Time + 5 minutes 0 seconds
Total 6 minutes 30 seconds
Next whole minute interval 7 minutes

2. FMVSS 301 Requirements:

(1) Time Period

First 5 minutes from onset of rotation	6th min.	7th min.	8th min. (if required)
--	----------	----------	------------------------

(2) Maximum Allowable Solvent Spillage

142 g	28 g	28 g	28 g
-------	------	------	------

3. Actual Test Vehicle Solvent Spillage:

0 g	0 g	0 g	N/A
-----	-----	-----	-----

Note: Record spillage for whole minute intervals only as determined above.

4. Solvent Spillage Location(s):

None

Appendix A

Photographs

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¹ The test vehicle is incorrectly labeled as C45600 in the photos. The correct NHTSA number for this vehicle is C45101.

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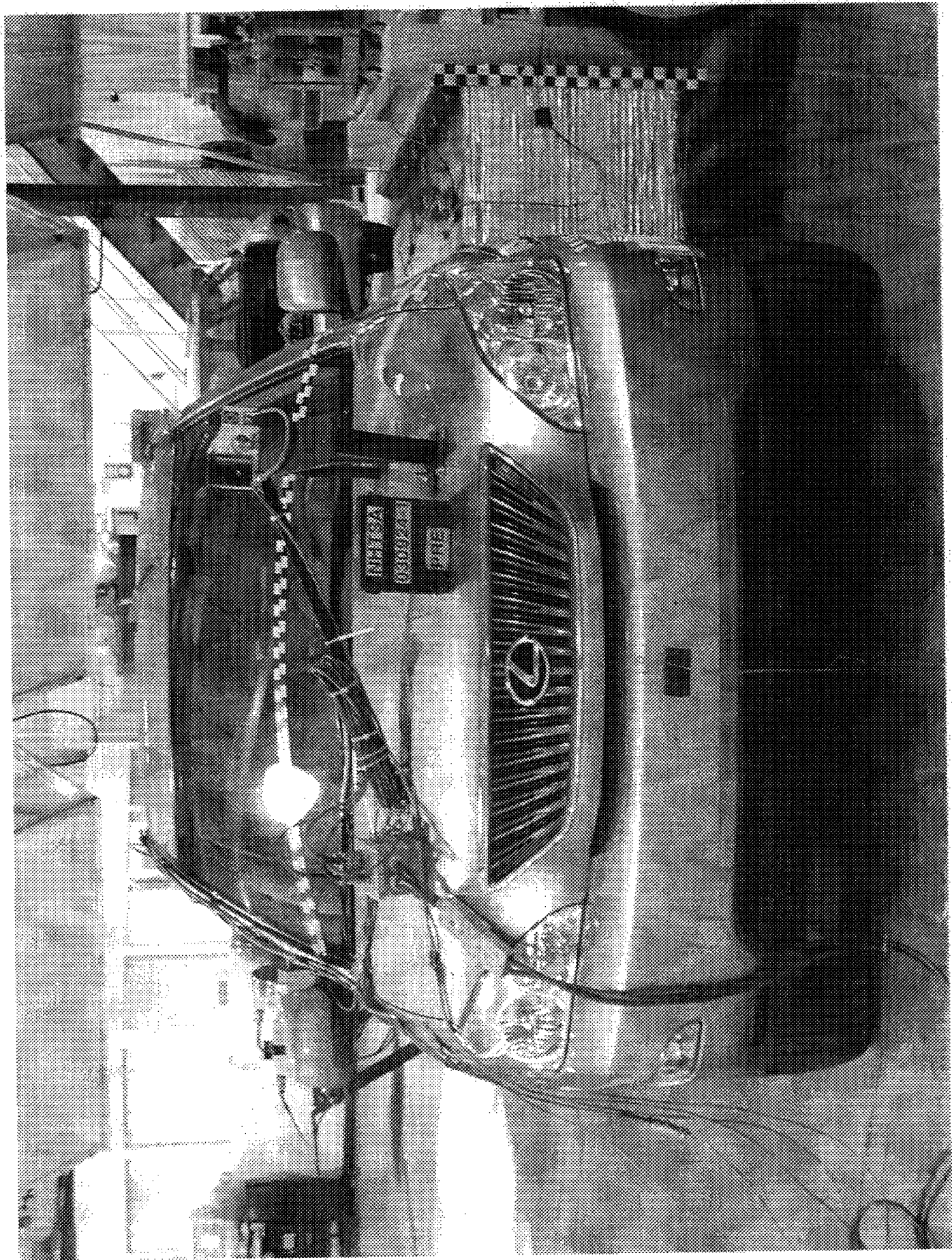


Figure A-1 Pre-Test Front View of Test Vehicle

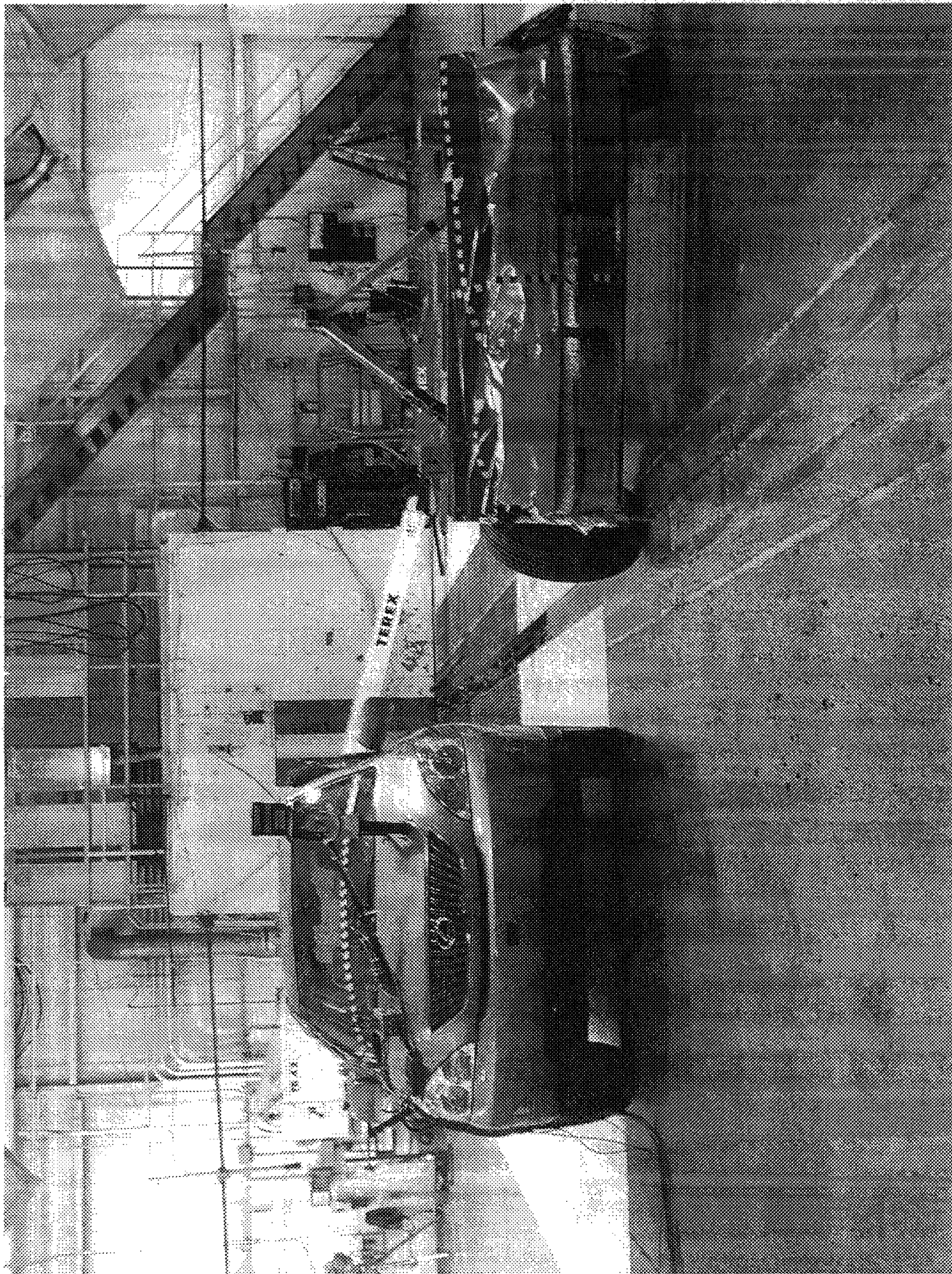


Figure A-2 Post-Test Front View of Test Vehicle

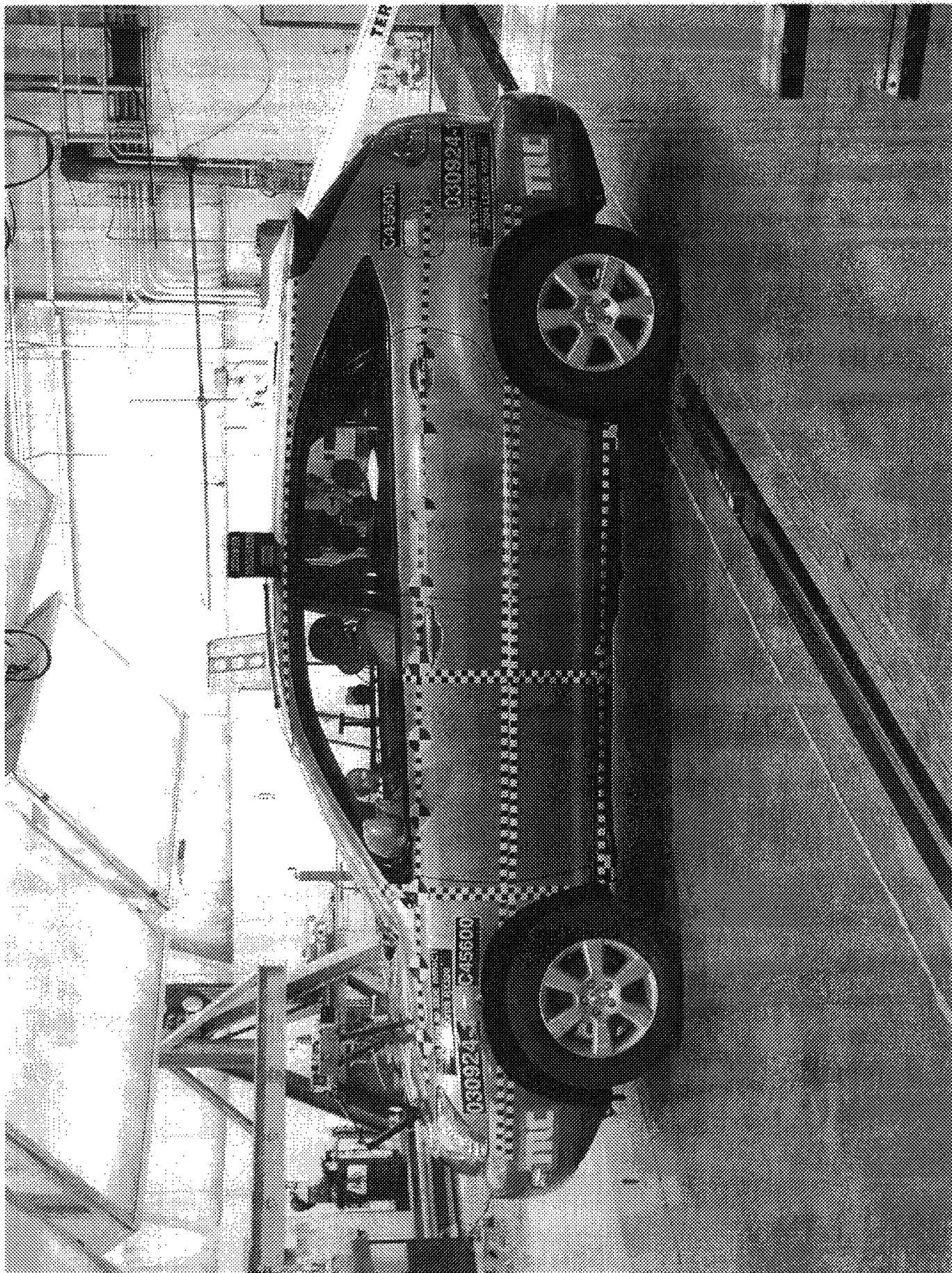


Figure A-3 Pre-Test Impacted Side View of Test Vehicle

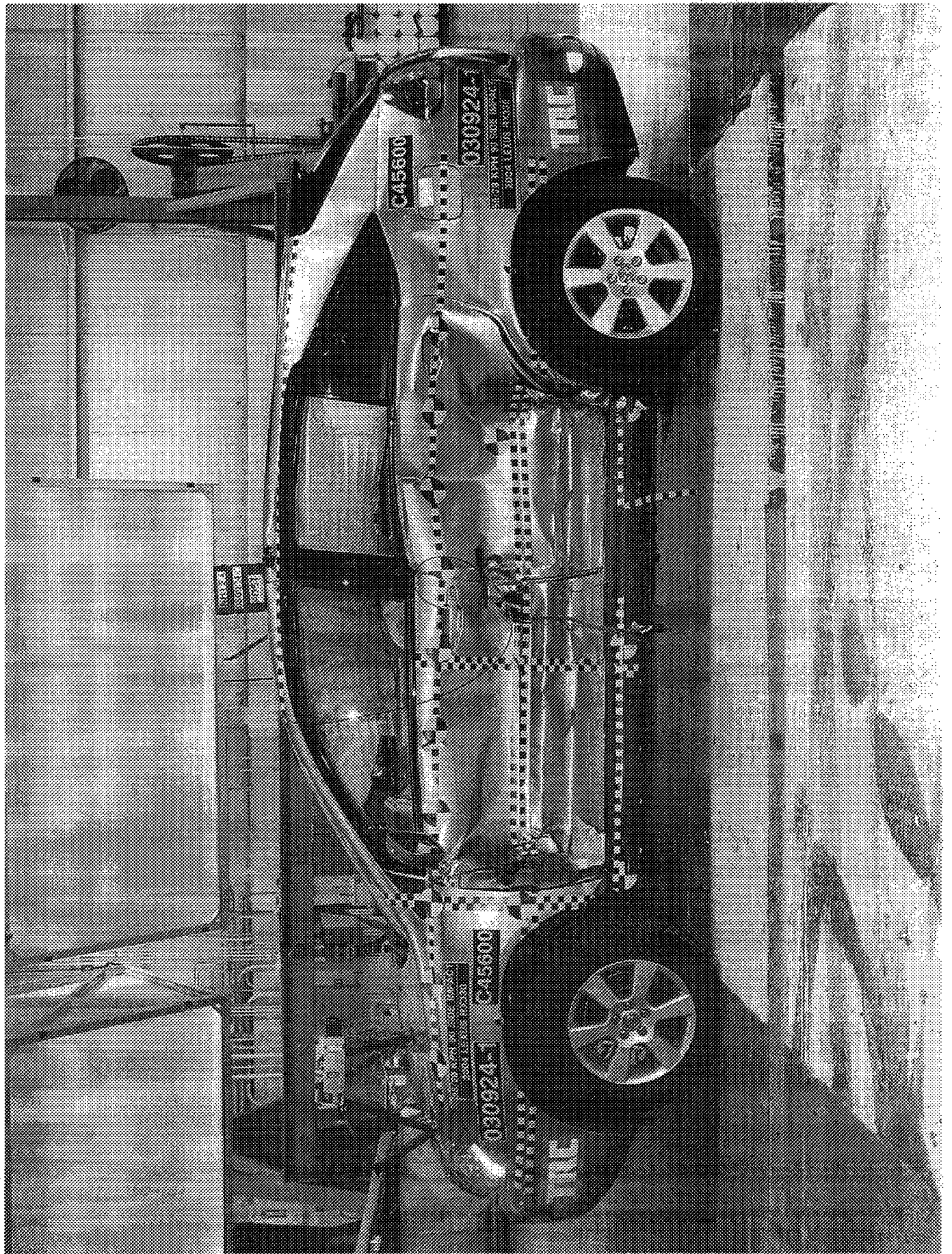


Figure A-4 Post-Test Impacted Side View of Test Vehicle

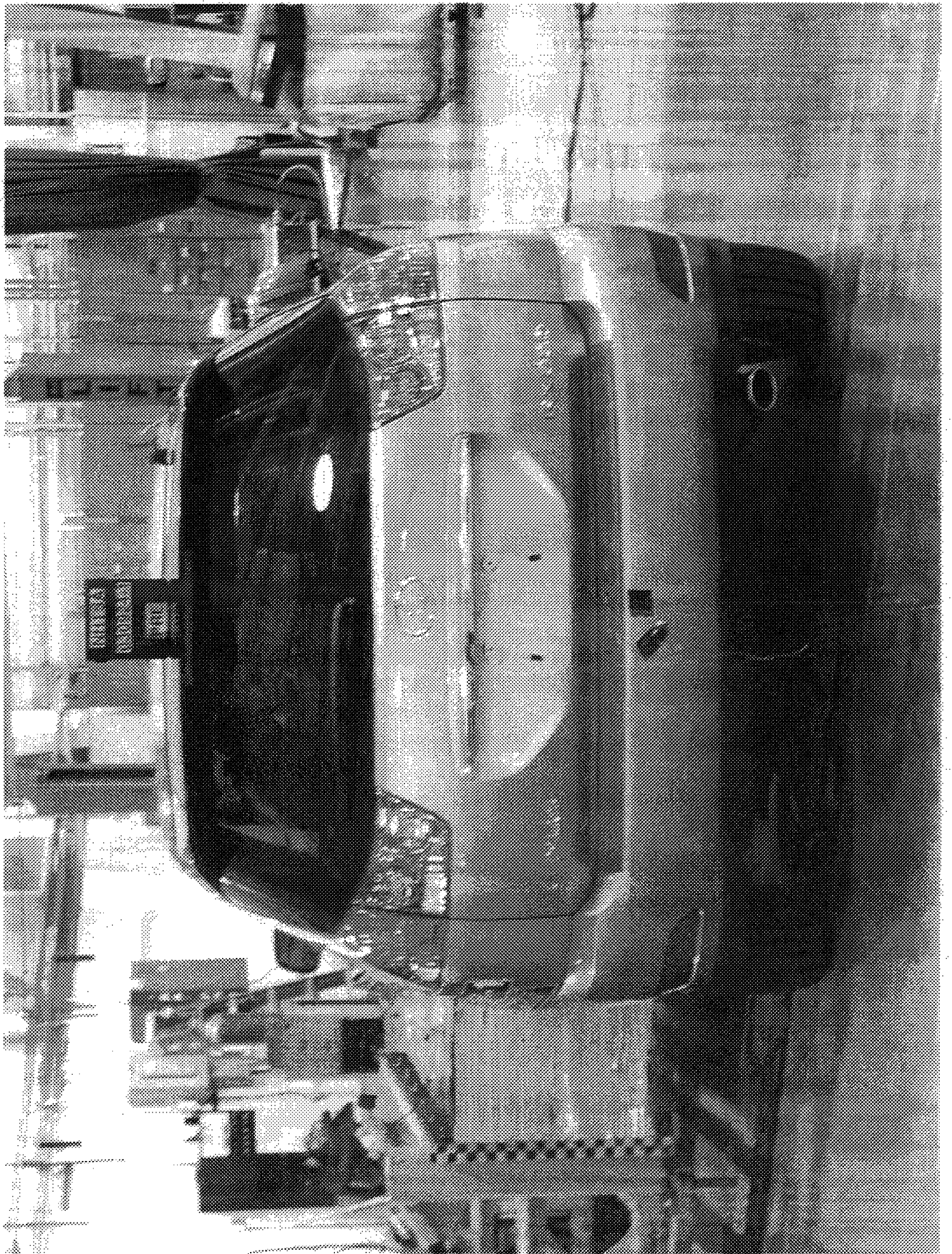


Figure A-5 Pre-Test Rear View of Test Vehicle

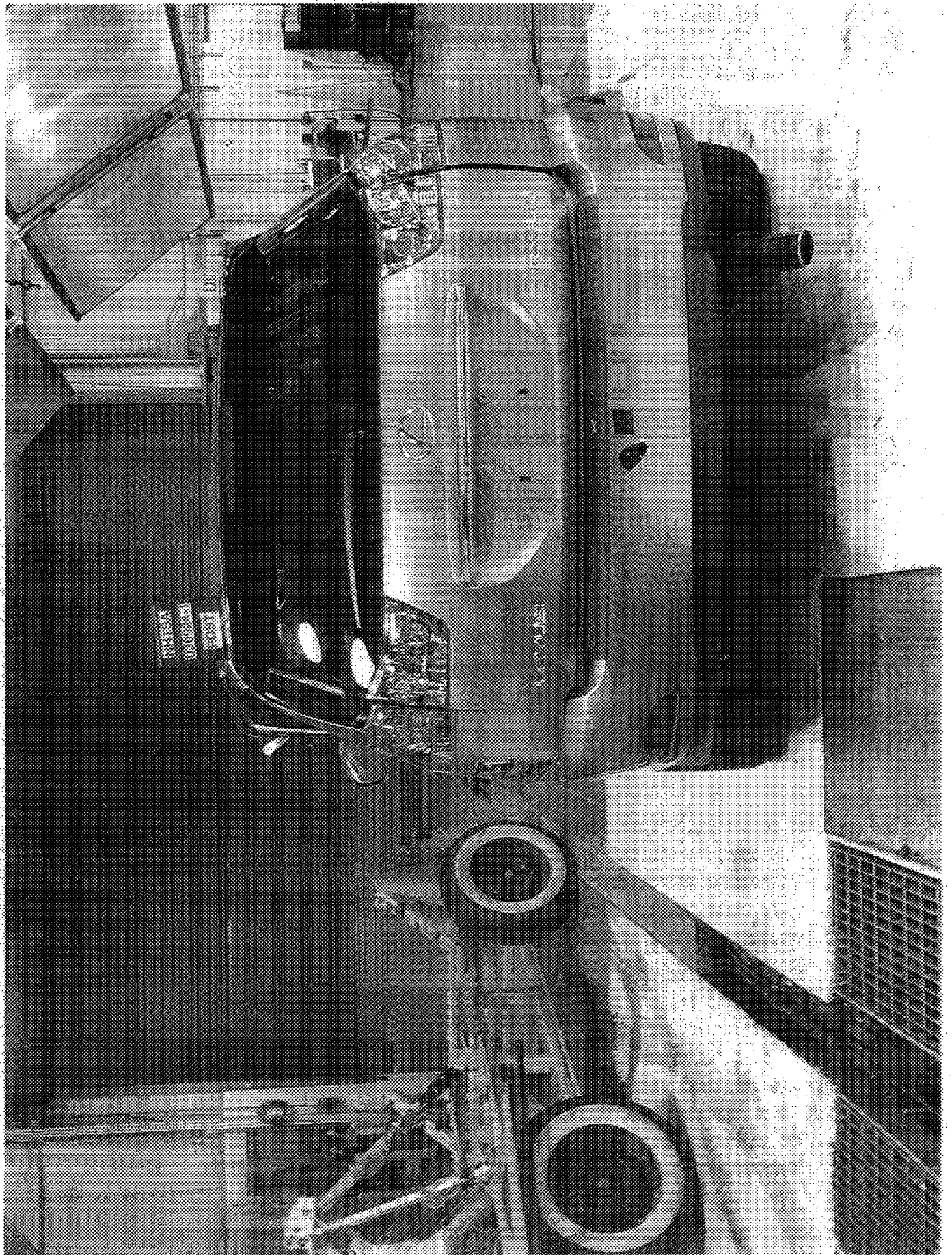


Figure A-6 Post-Test Rear View of Test Vehicle

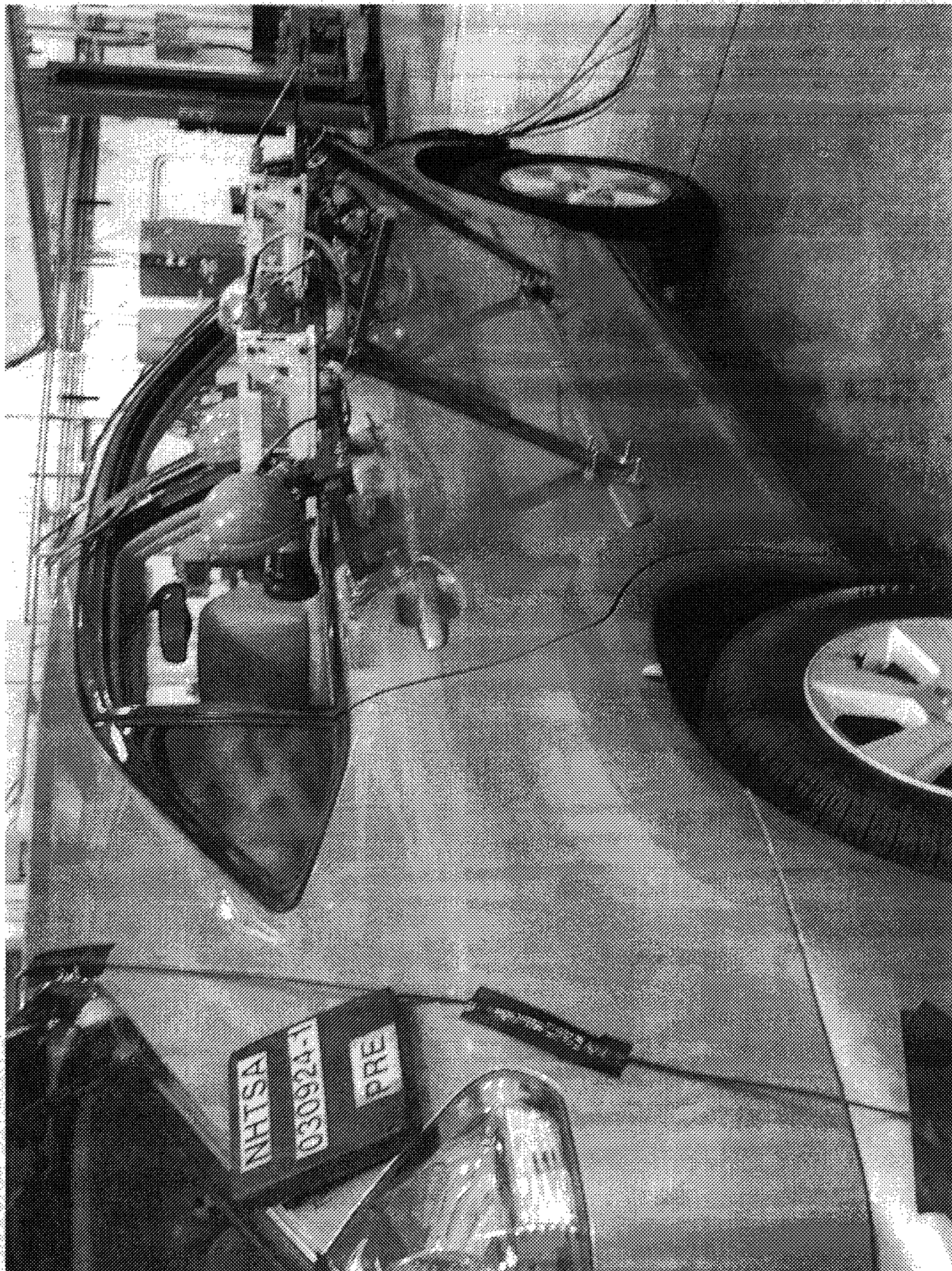


Figure A-7 Pre-Test Right Rear View of Test Vehicle

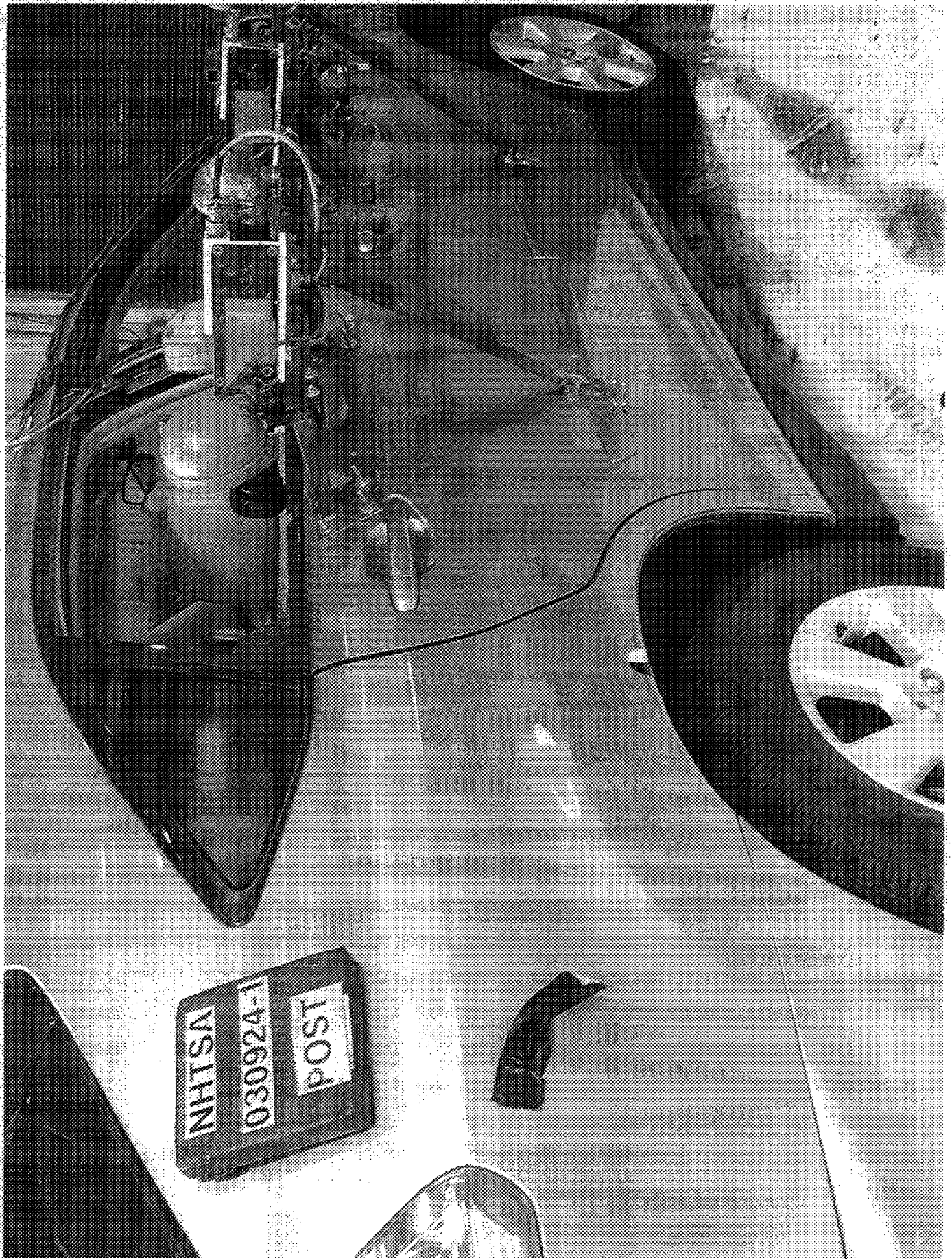


Figure A-8 Post-Test Right Rear View of Test Vehicle

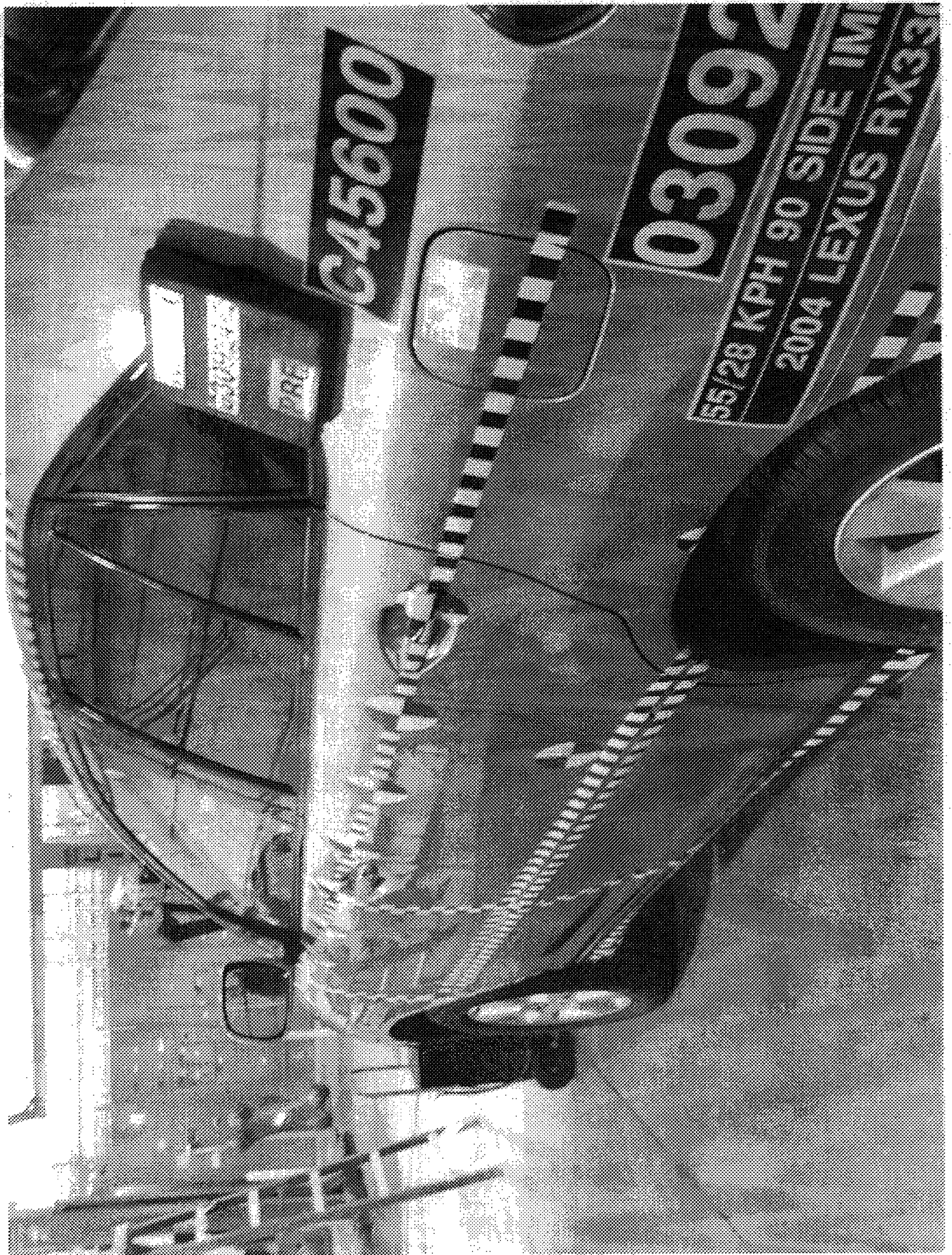


Figure A-9 Pre-Test Impacted Side Angled Door View

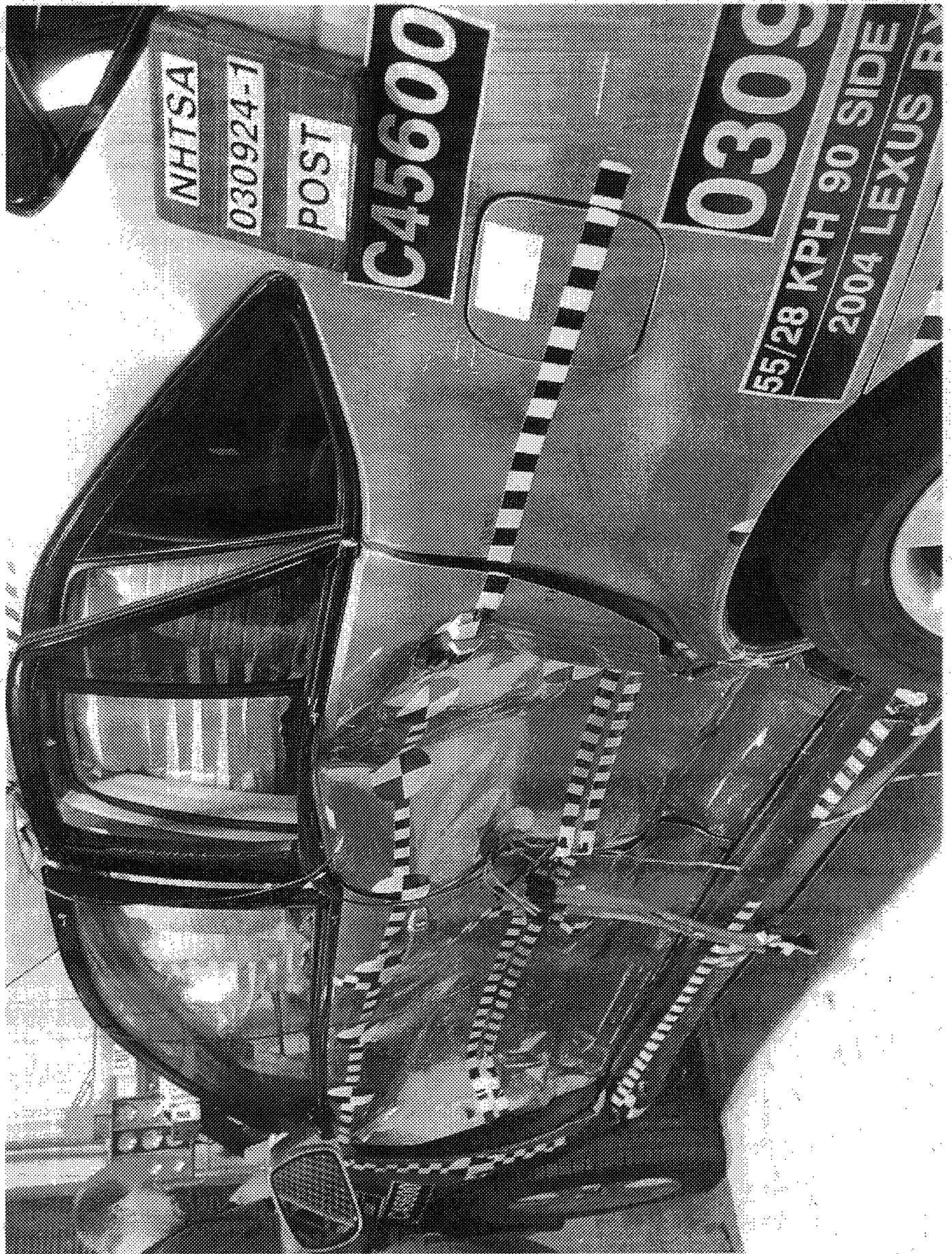


Figure A-10 Post-Test Impacted Side Angled Door View

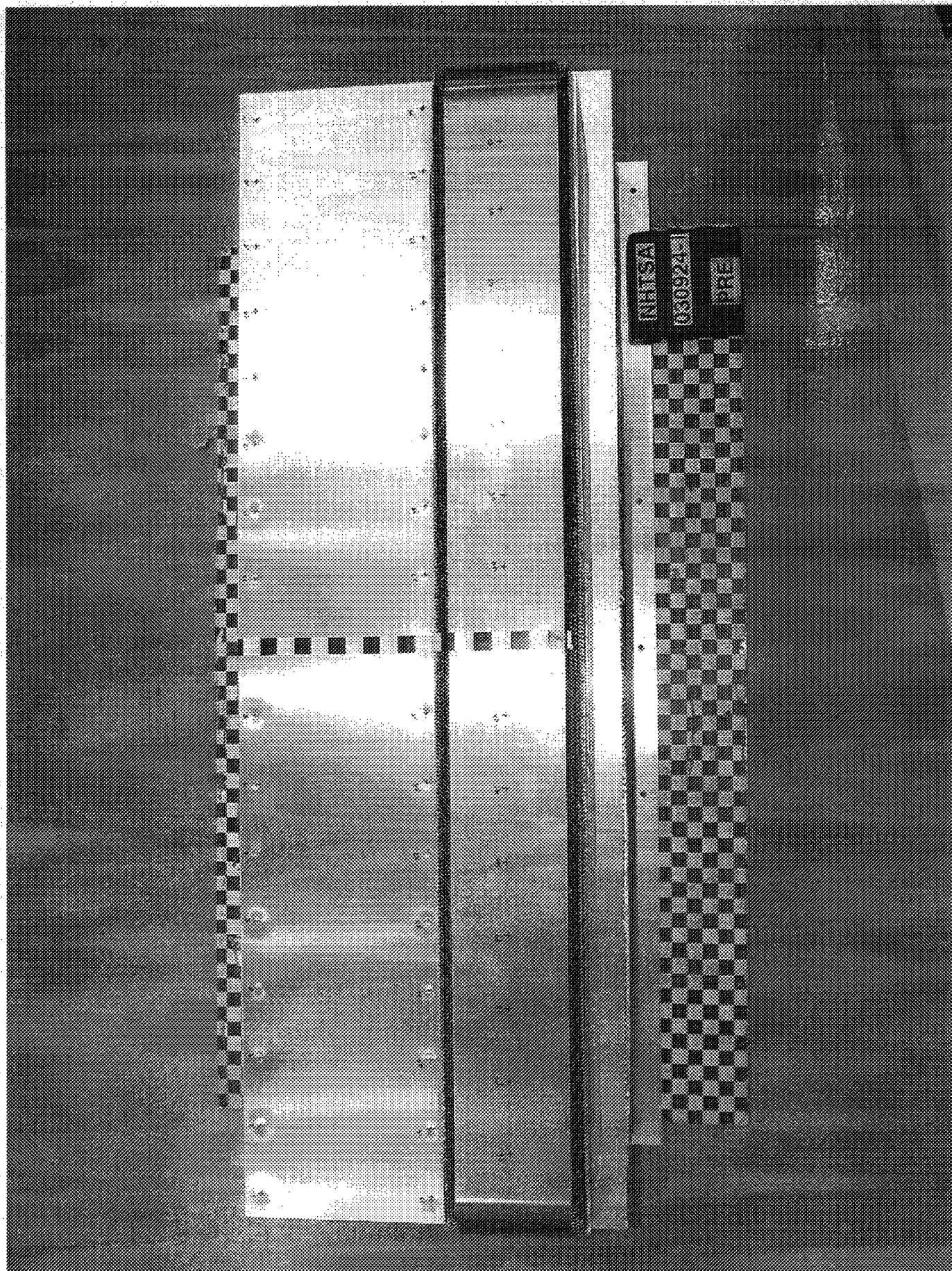


Figure A-11 Pre-Test Frontal View of Impactor Face

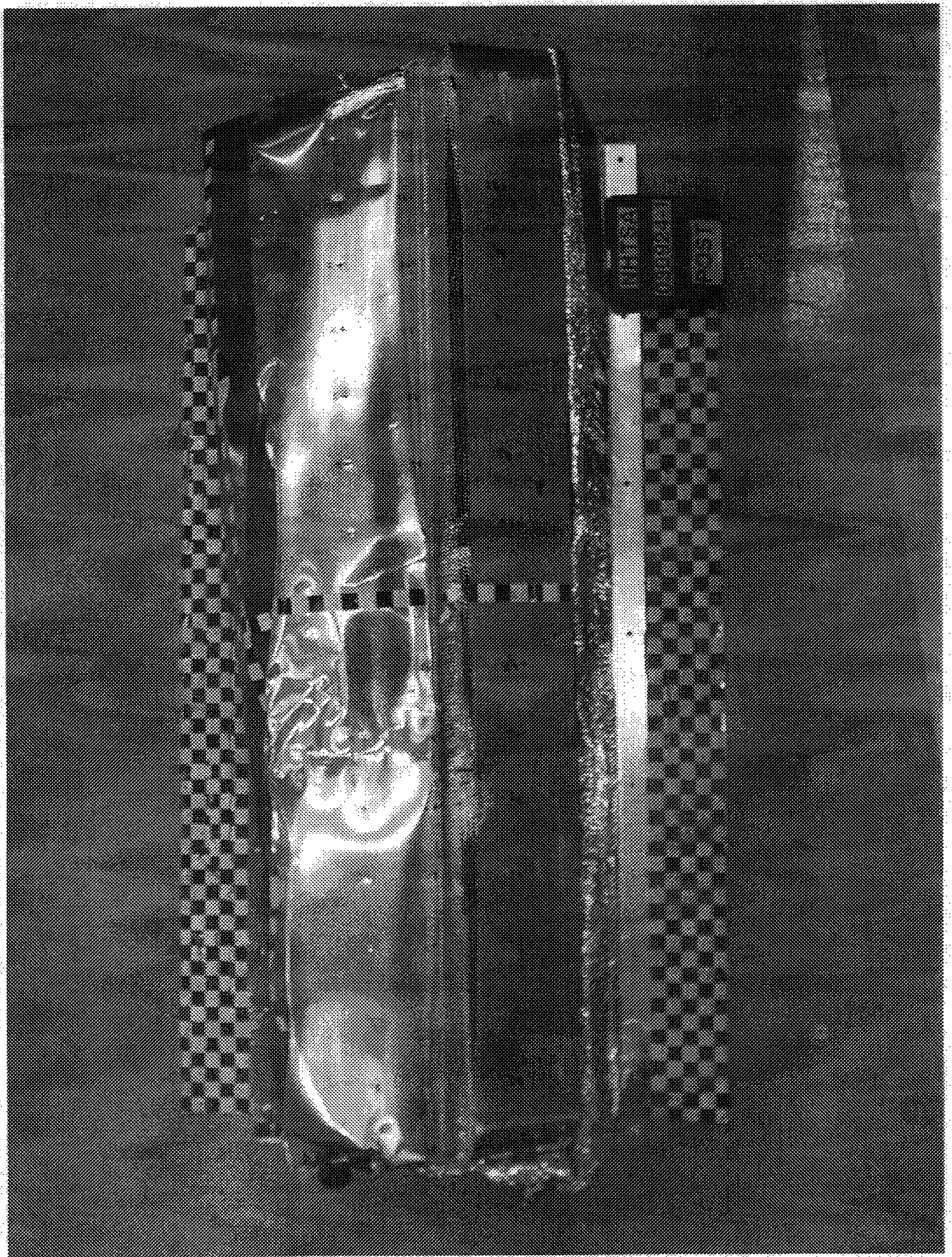


Figure A-12 Post-Test Frontal View of Impactor Face

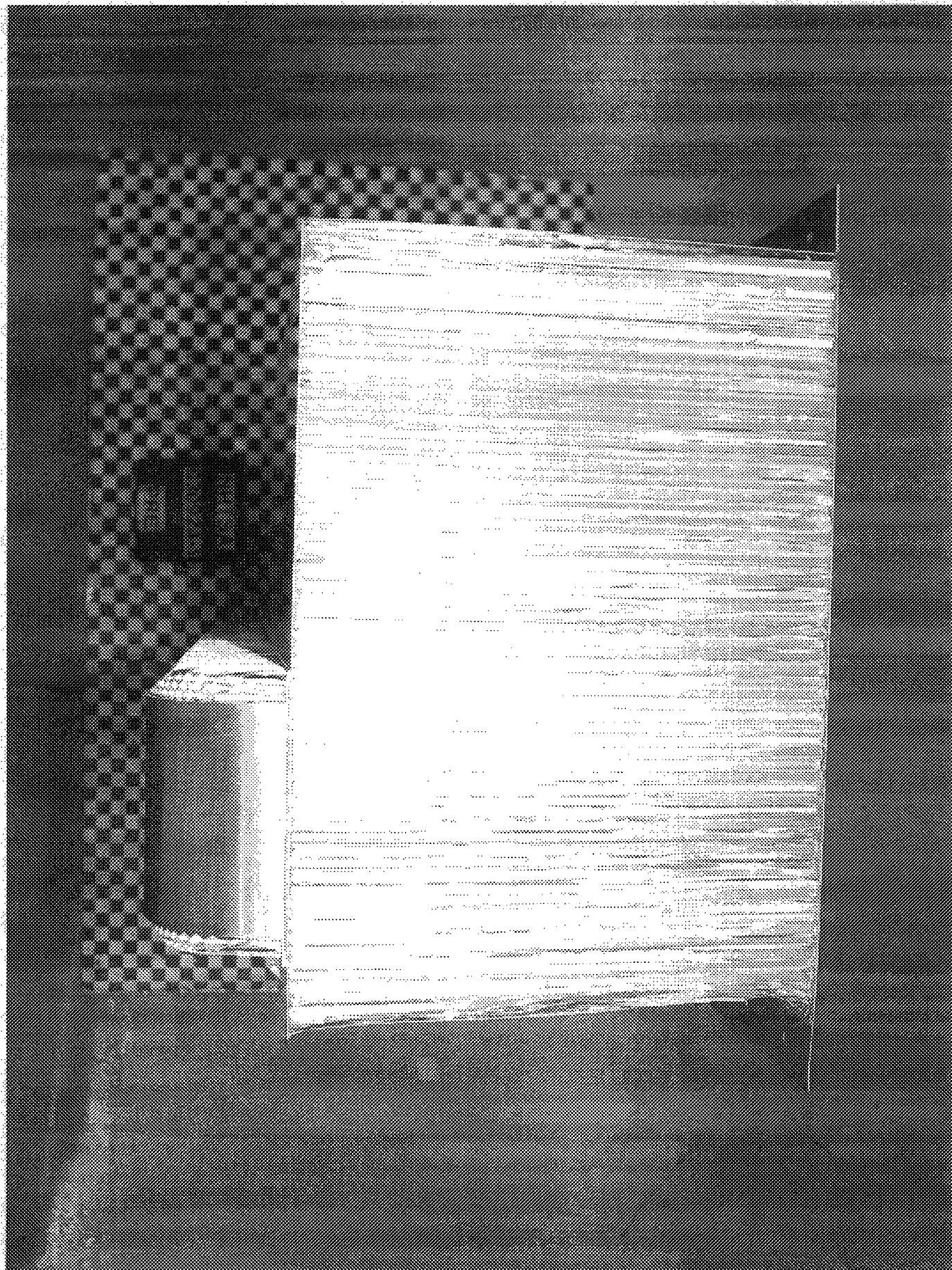


Figure A-13 Pre-Test Left Side View of Impactor Face

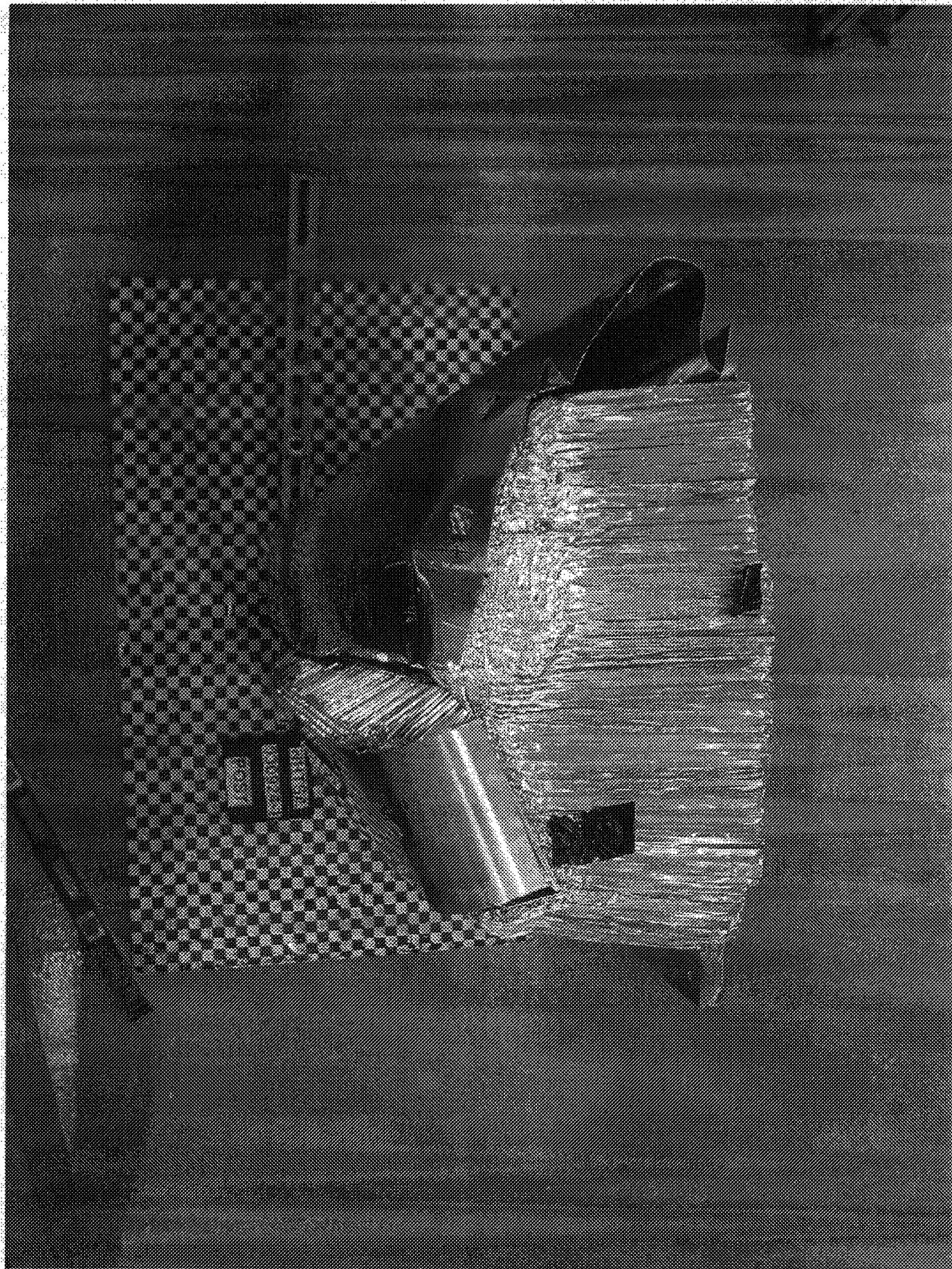


Figure A-14 Post-Test Left Side View of Impactor Face

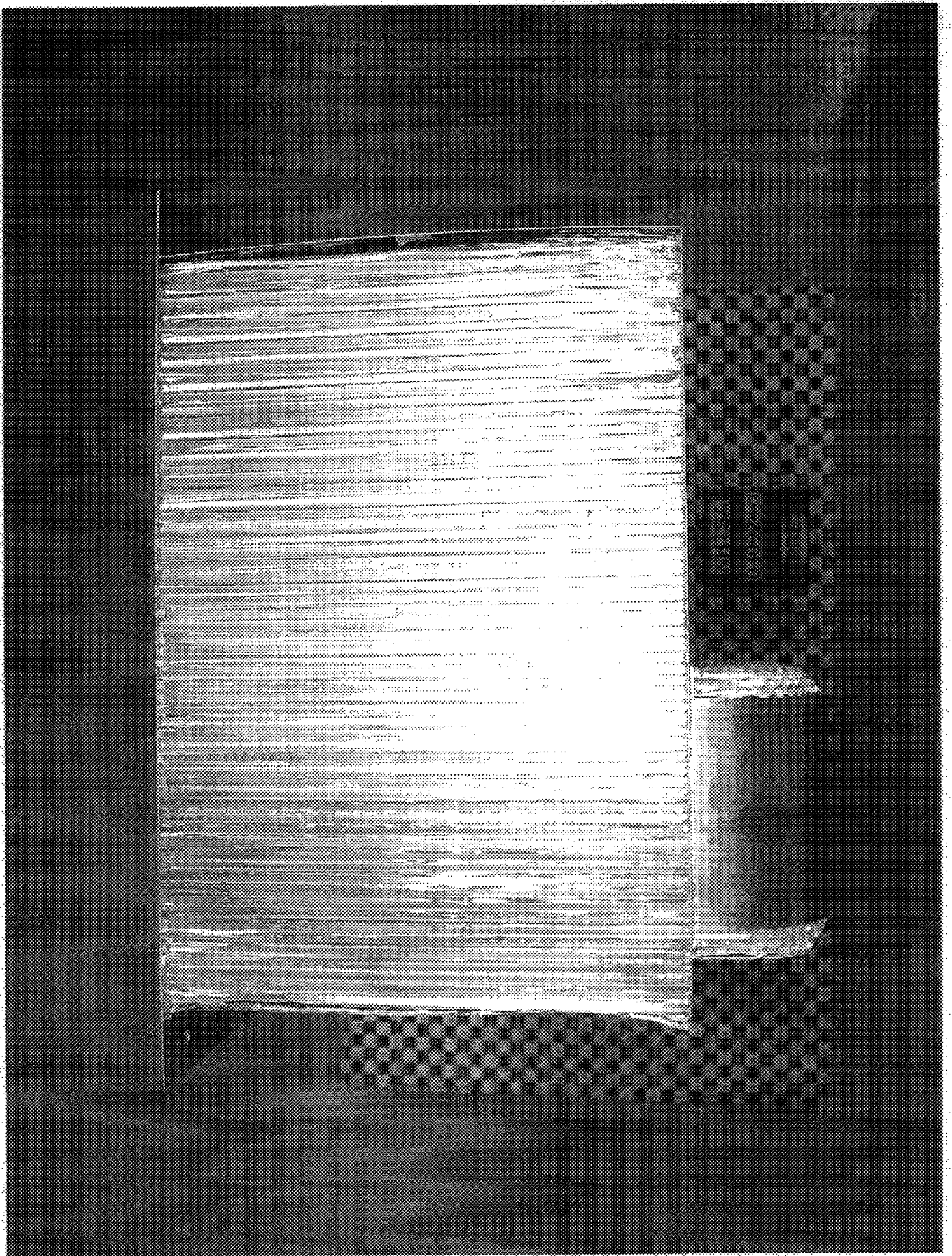


Figure A-15 Pre-Test Right Side View of Impactor Face

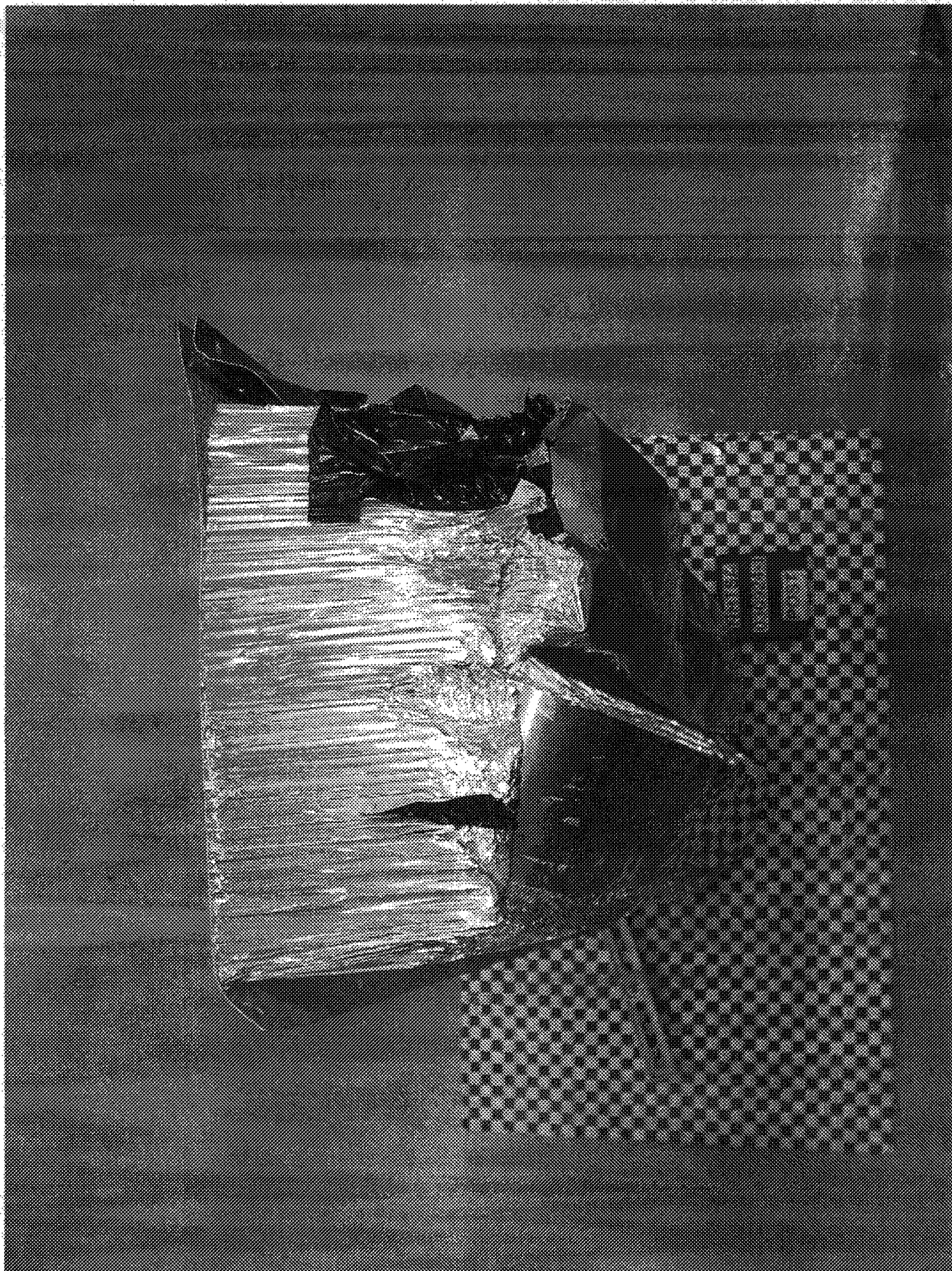


Figure A-16 Post-Test Right Side View of Impactor Face

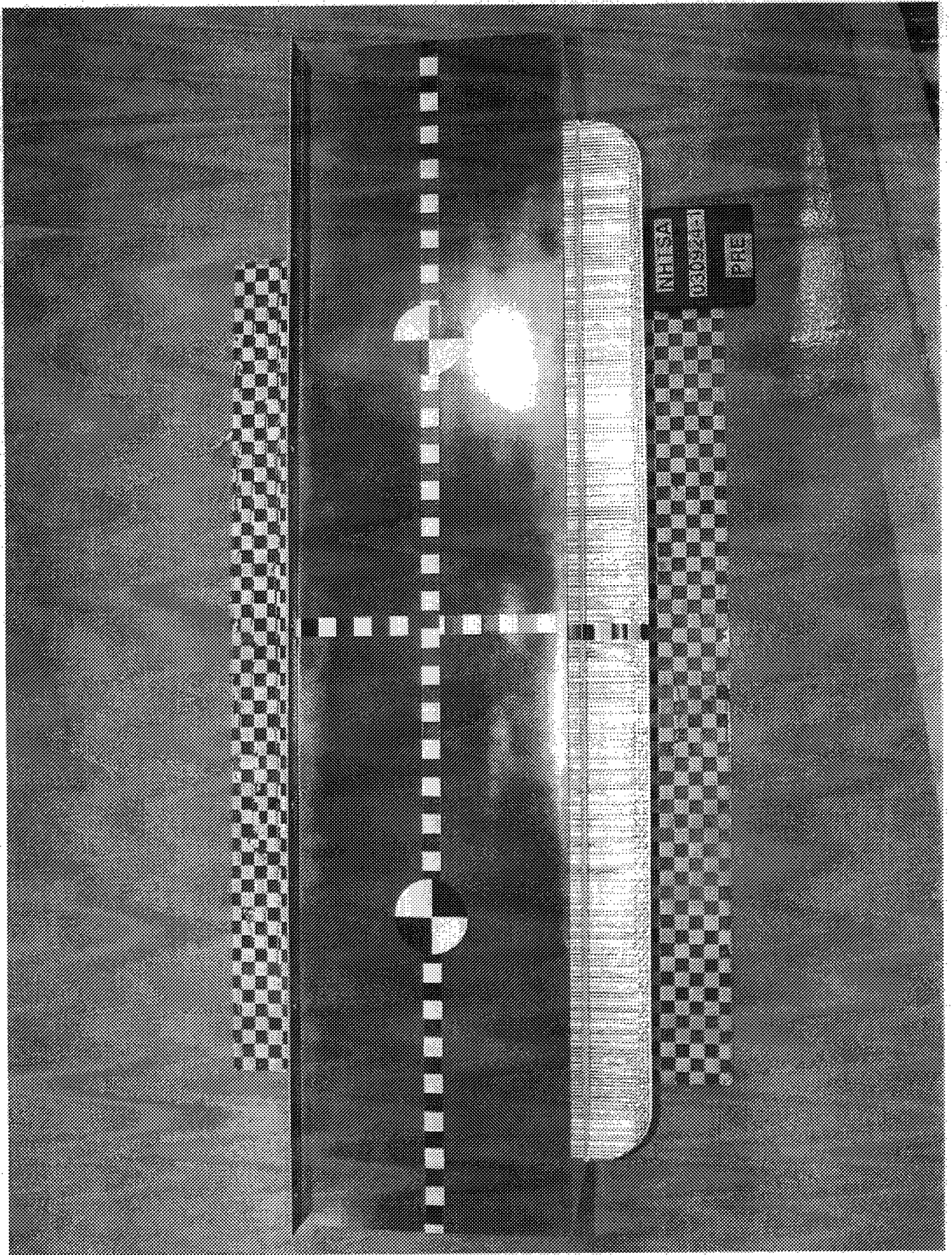


Figure A-17 Pre-Test Top View of Impactor Face

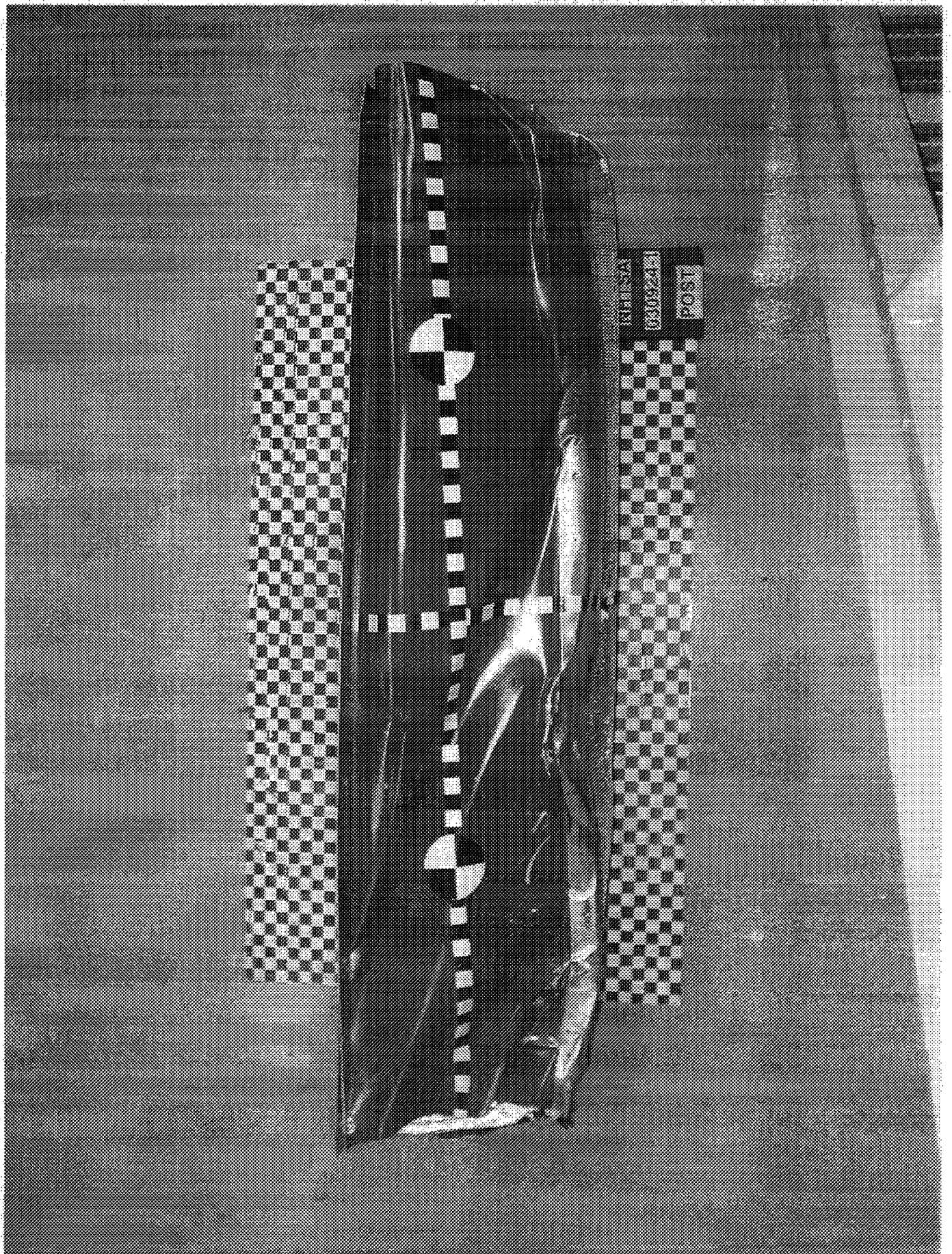


Figure A-18 Post-Test Top View of Impactor Face

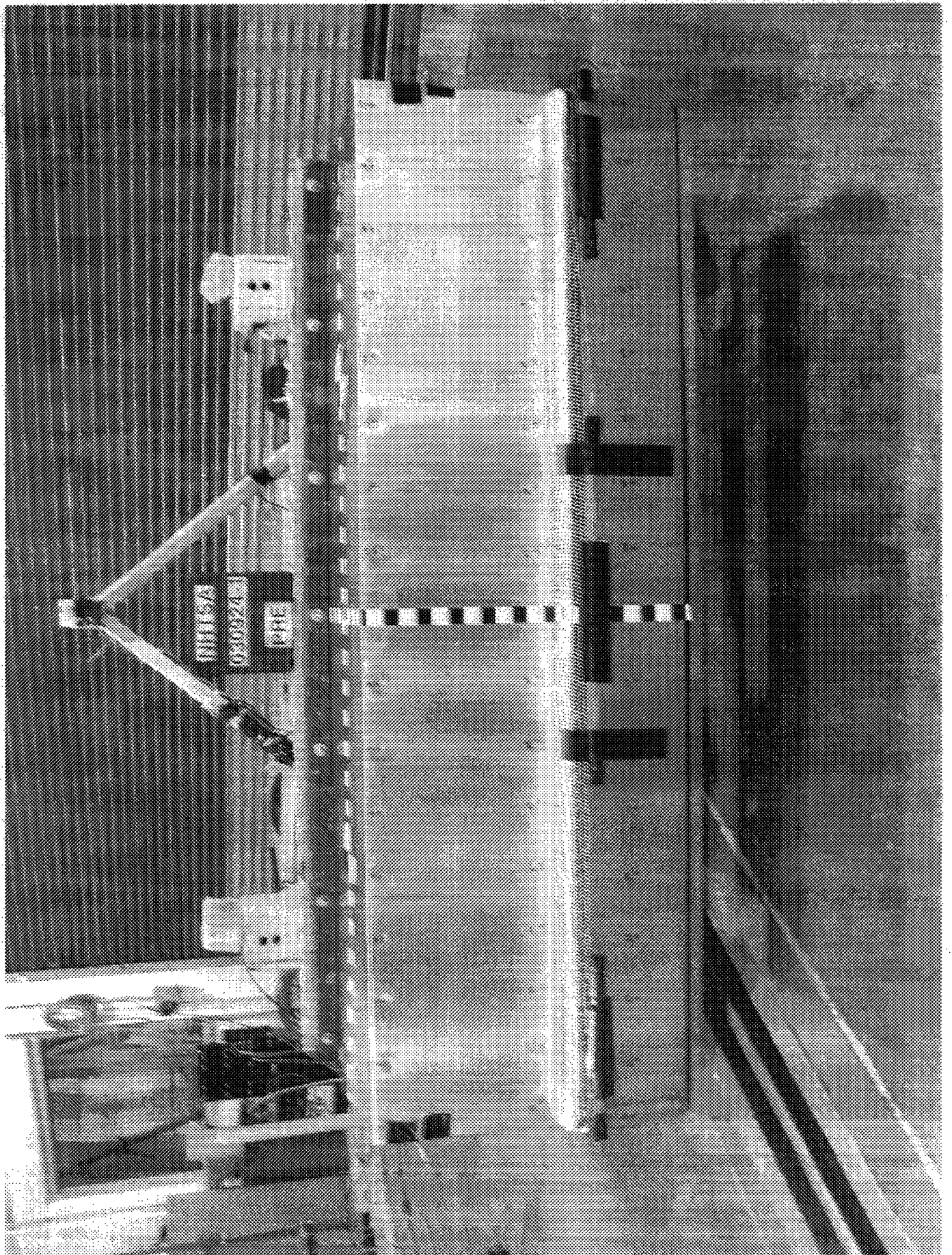


Figure A-19 Pre-Test View of MDB Showing Contact Switches in Place

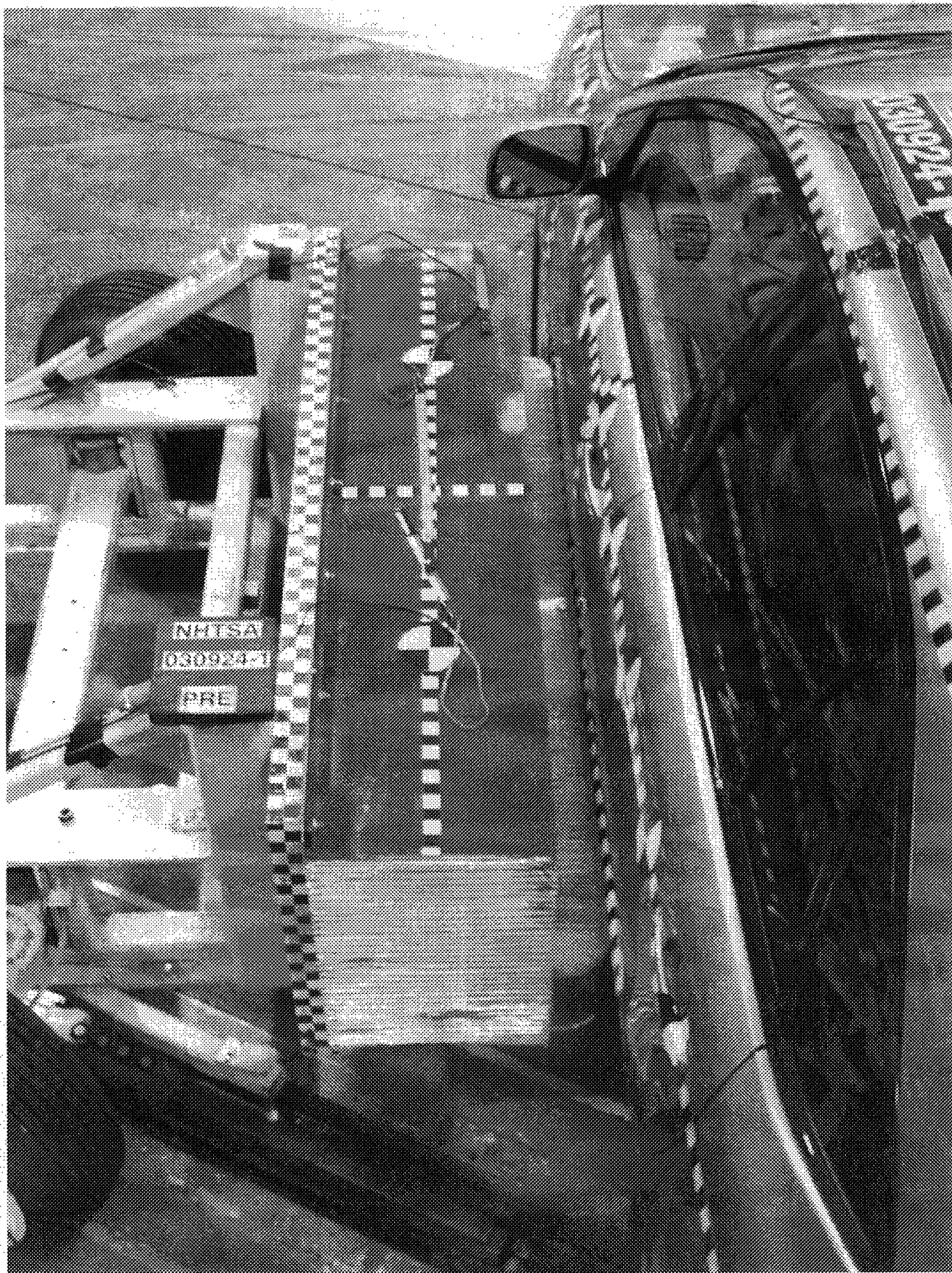


Figure A-20 Pre-Test Overhead View of MDB Aligned with Vehicle

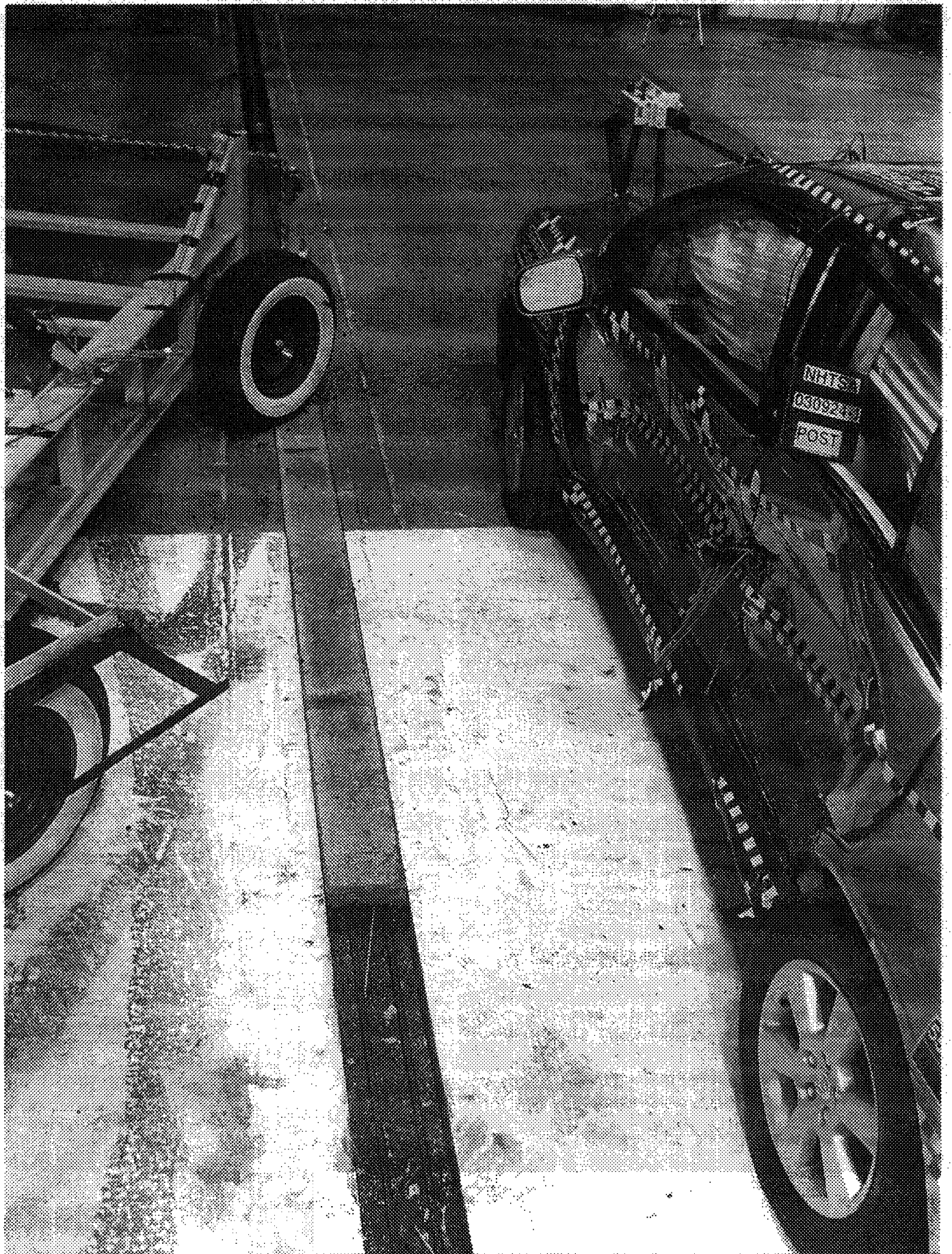


Figure A-21 Post-Test Overhead View of MDB and Vehicle



Figure A-22 Pre-Test Right Occupant Compartment View of Front SID HIII



Figure A-23 Post-Test Right Occupant Compartment View of Front SID HIII

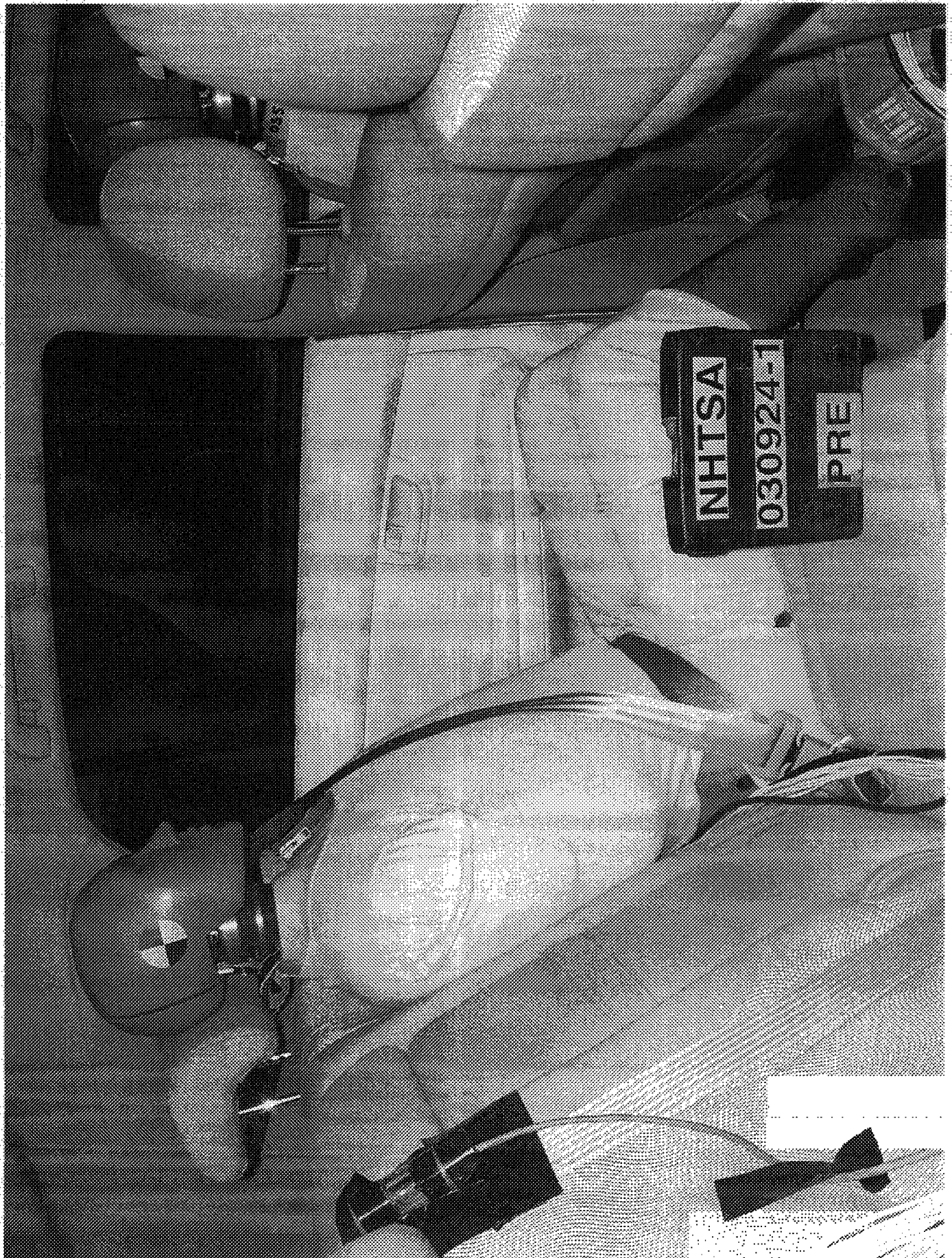


Figure A-24 Pre-Test Right Occupant Compartment View of Rear SID HIII

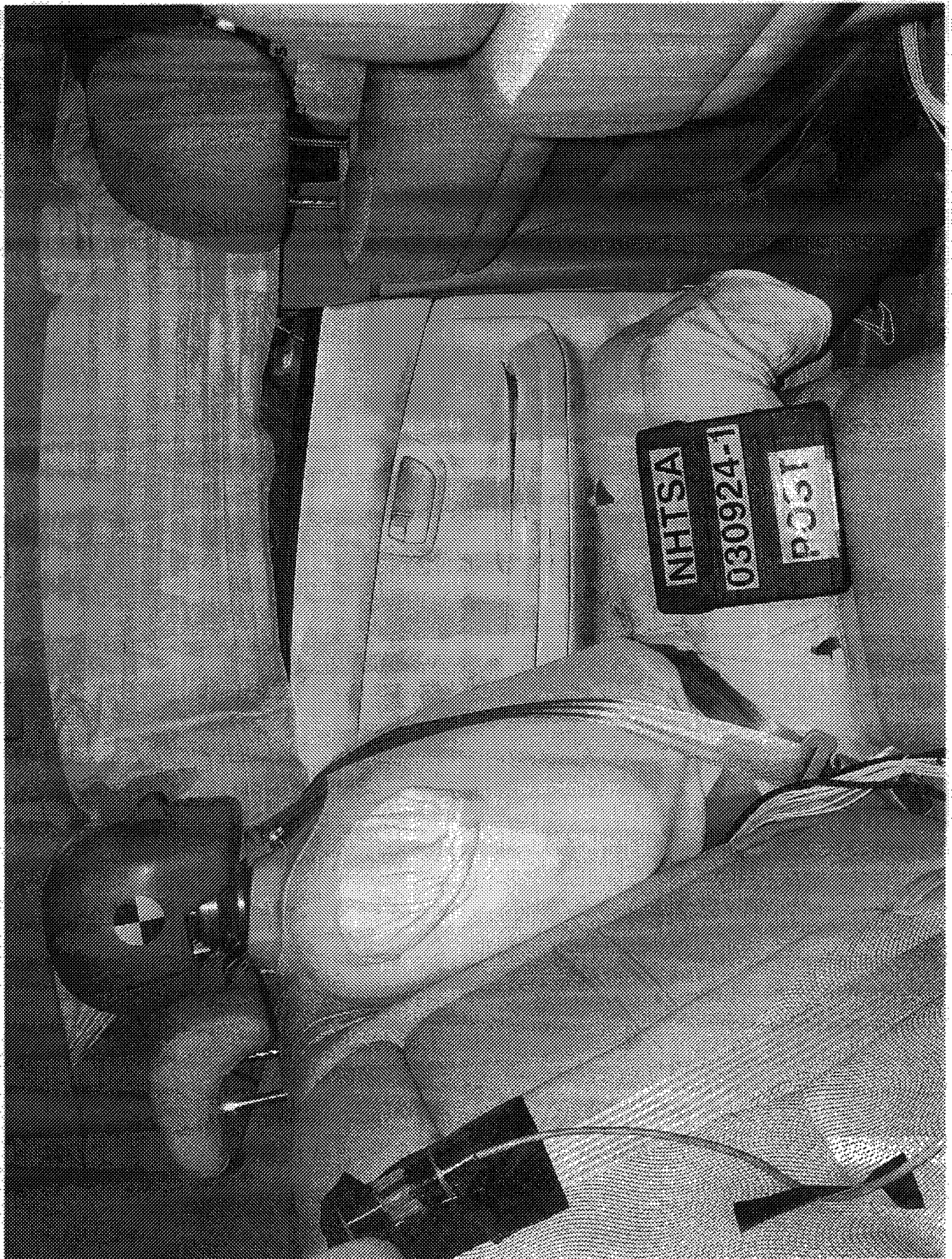


Figure A-25 Post-Test Right Occupant Compartment View of Rear SID HIII

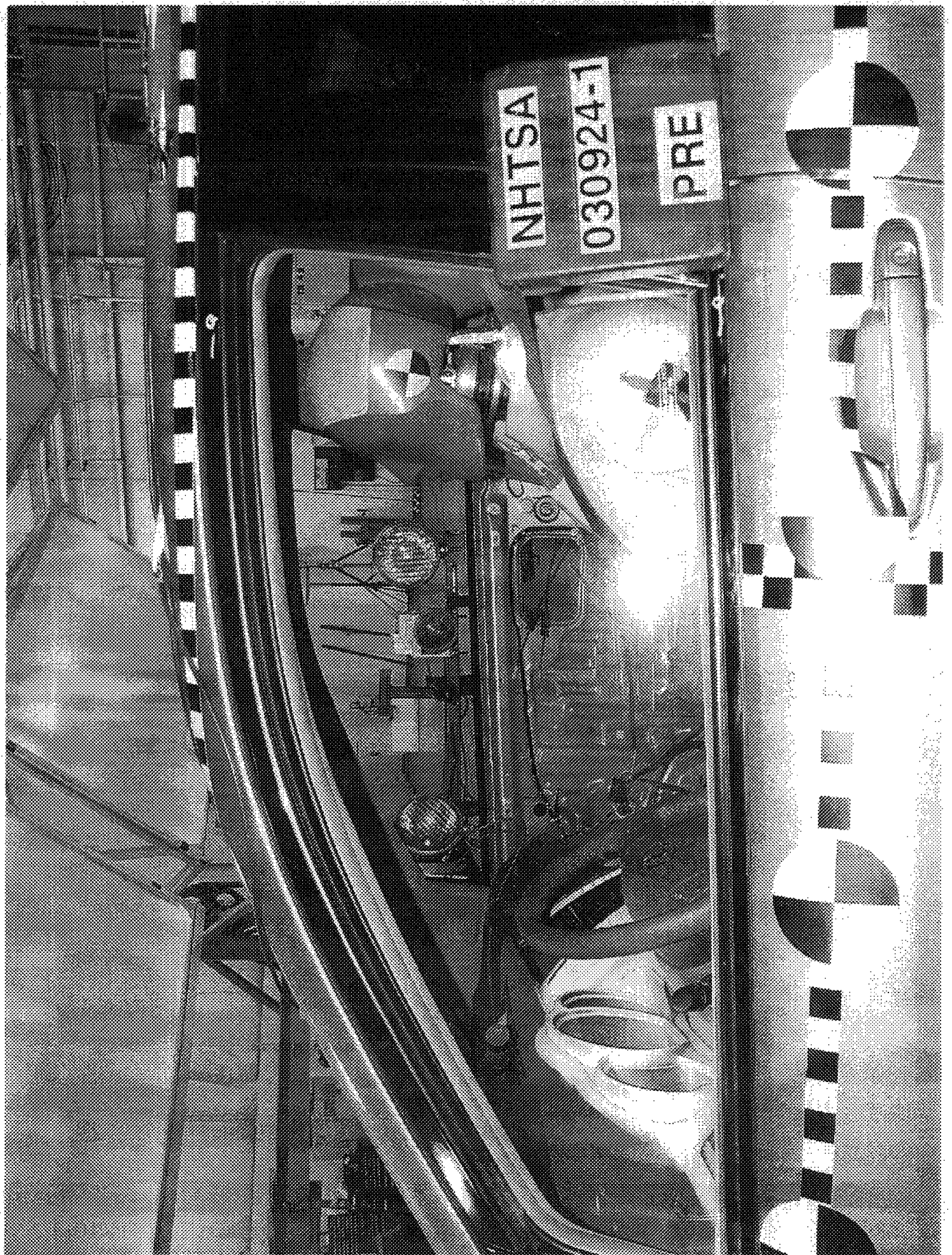


Figure A-26 Pre-Test Left View of Front SID HIII

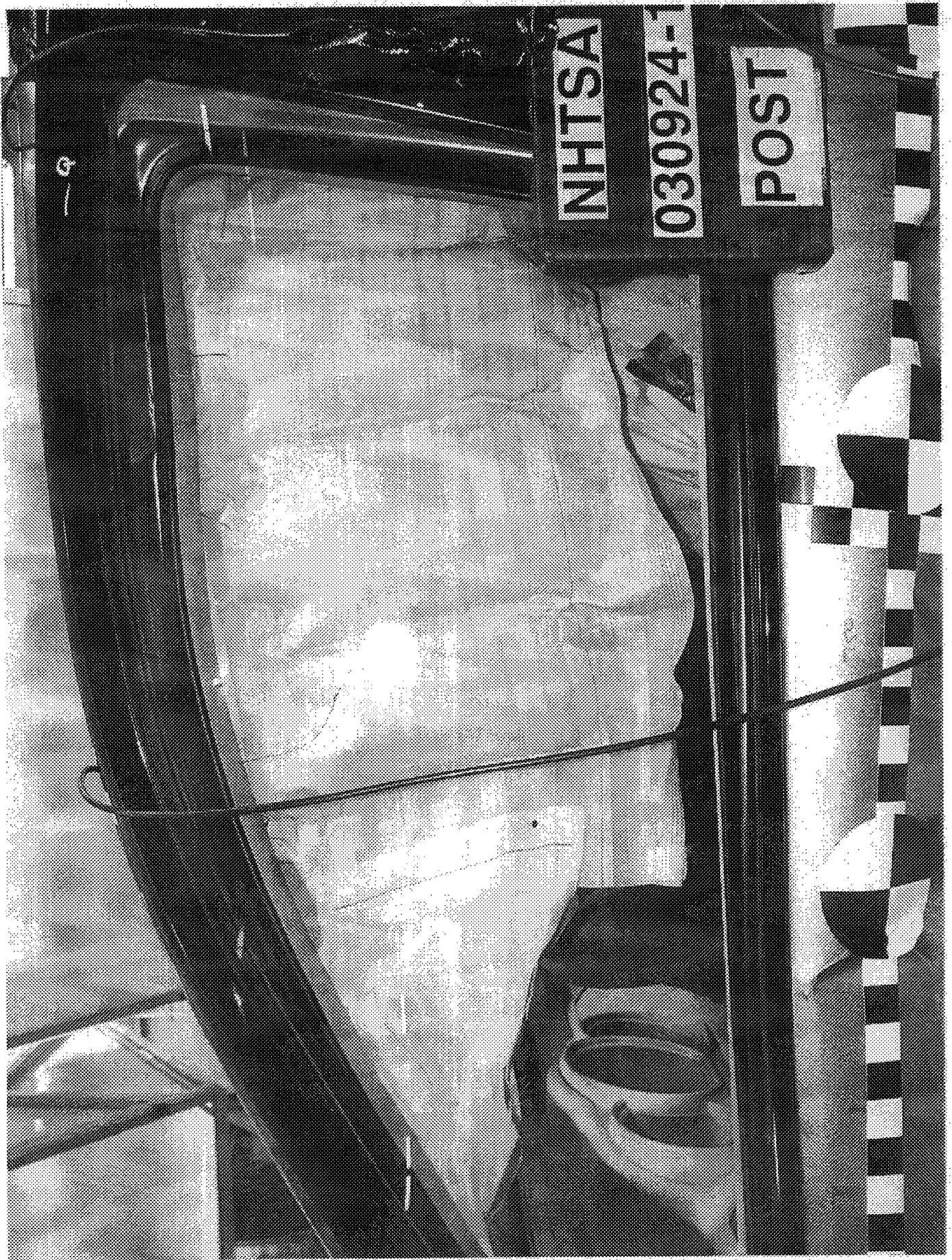


Figure A-27 Post-Test Left View of Front SID Hill



Figure A-28 Pre-Test Left View of Front SID HIII and Belt Position



Figure A-29 Pre-Test Front View of Front SID Hill and Door Clearance

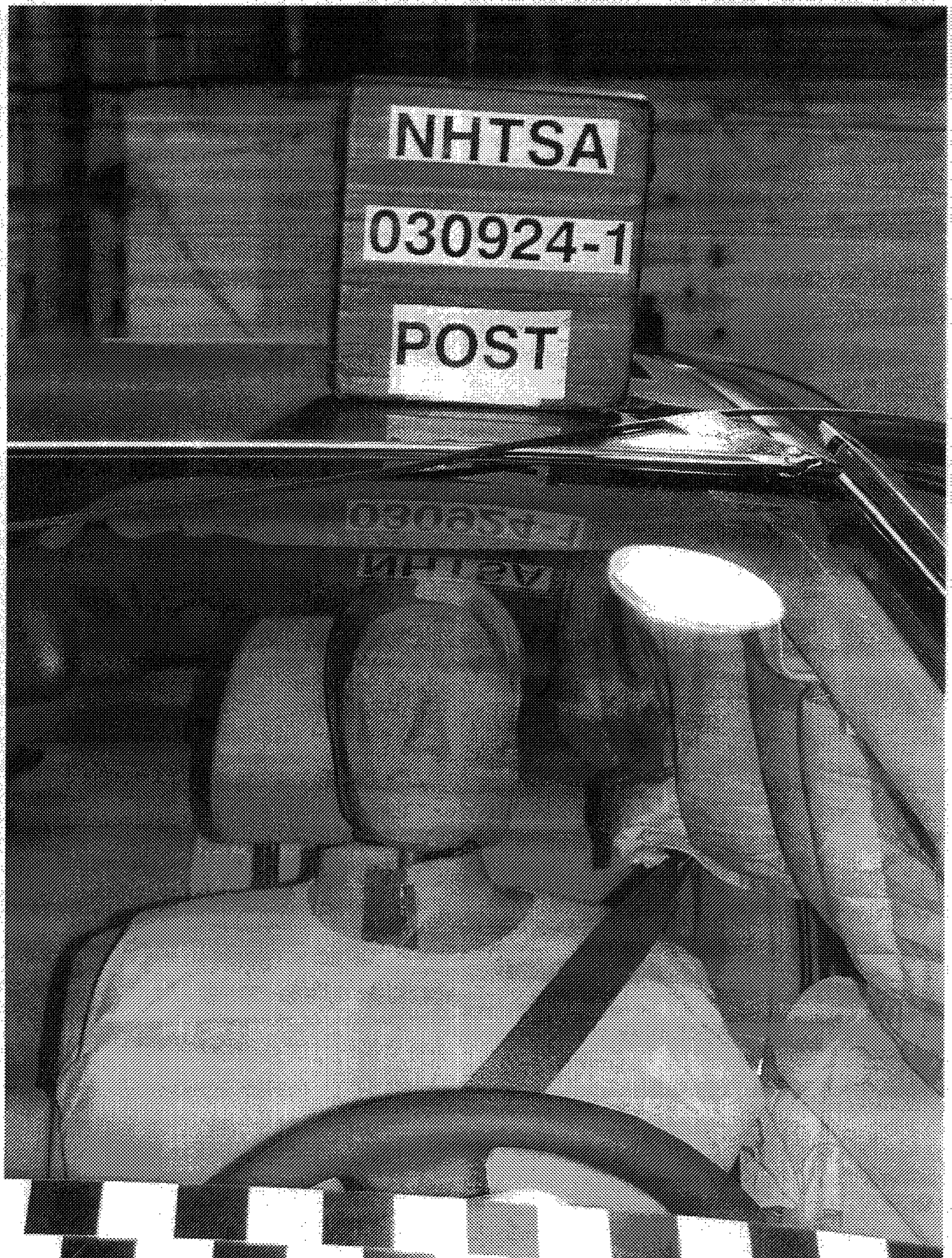


Figure A-30 Post-Test Front View of Front SID Hill and Door Clearance

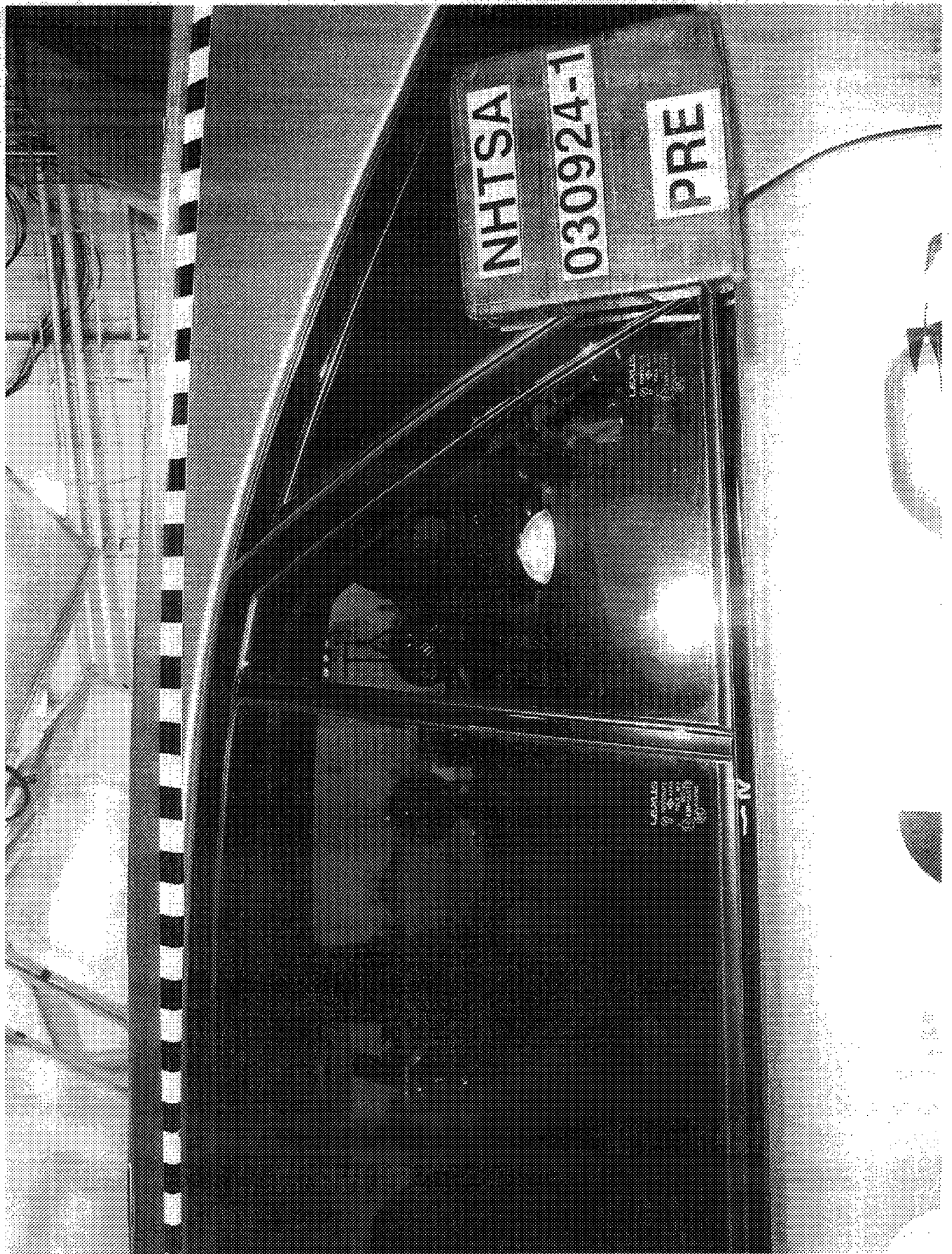


Figure A-31 Pre-Test Left View of Rear SID Hill

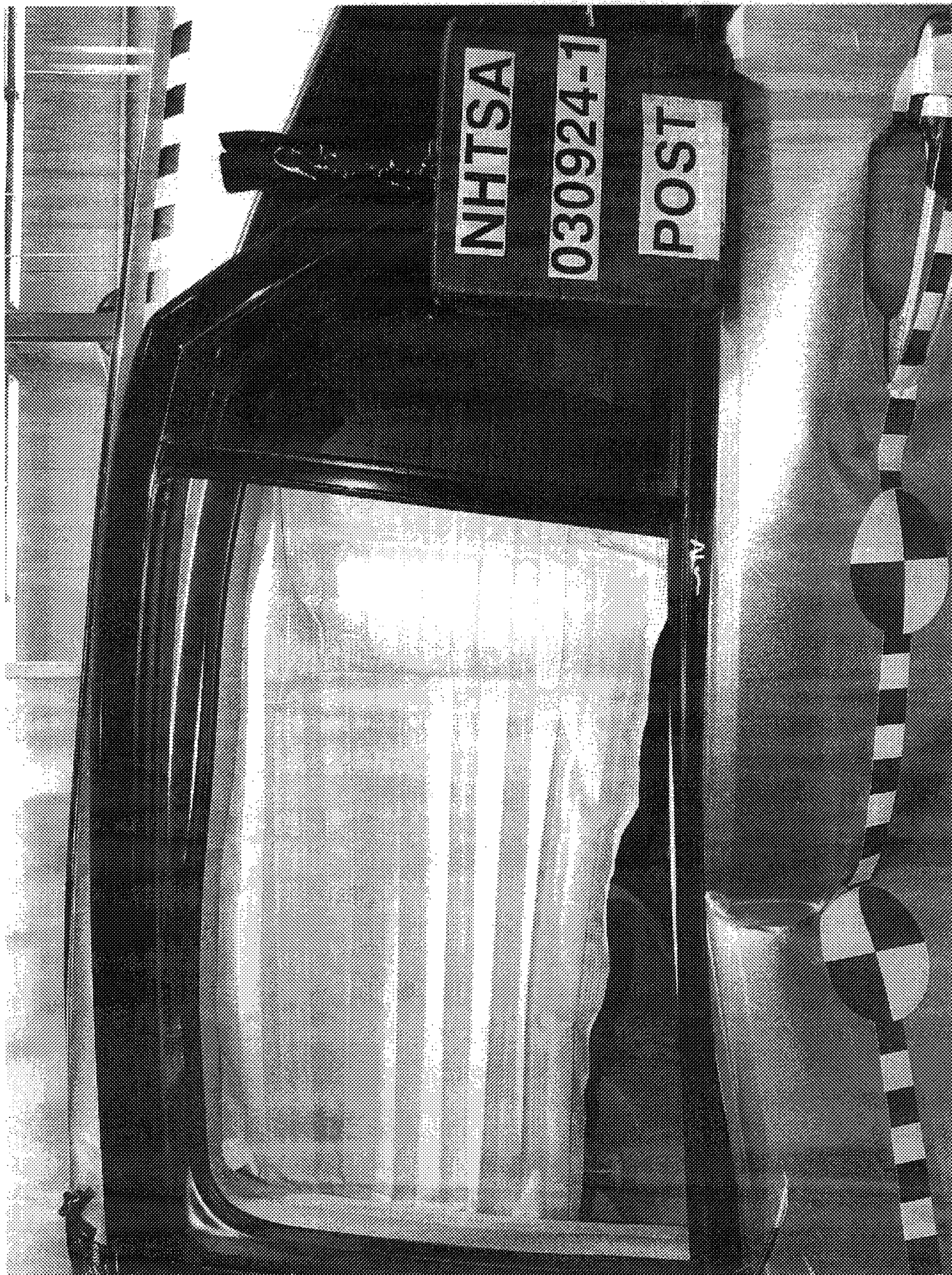


Figure A-32 Post-Test Left View of Rear SID HIII

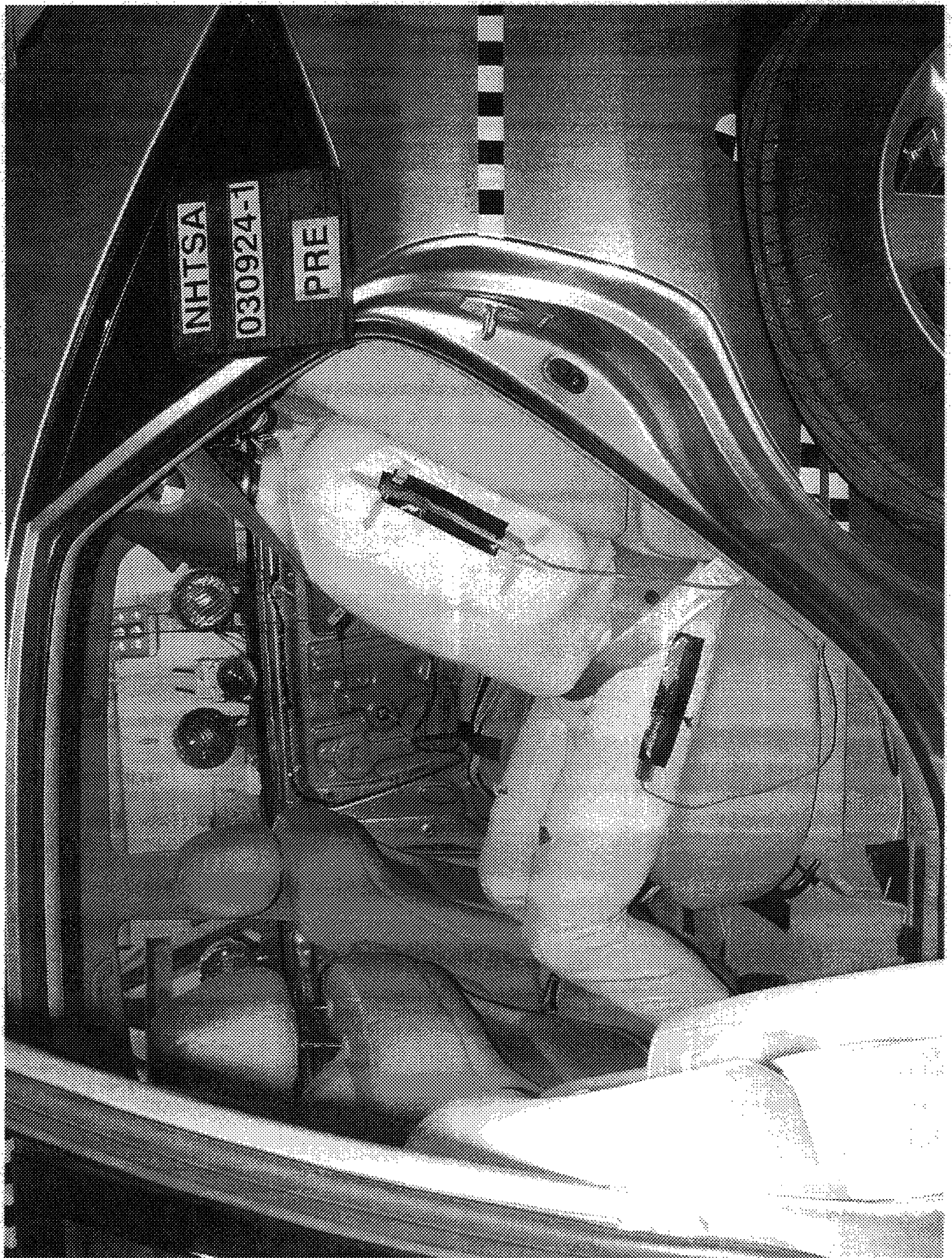


Figure A-33 Pre-Test Left View of Rear SID HIII and Belt Position



Figure A-34 Post-Test View of Rear SID HIII and Door Clearance

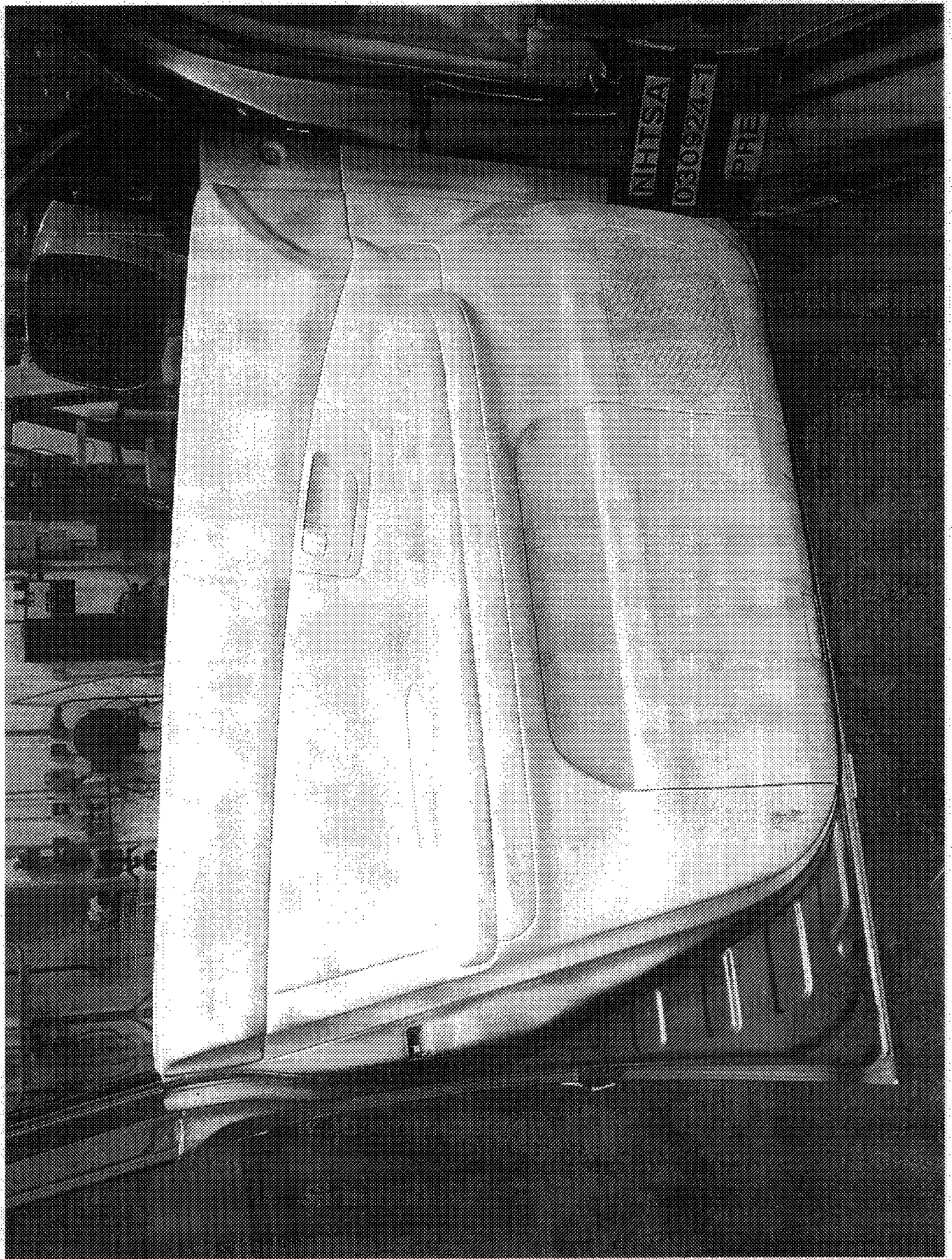


Figure A-35 Pre-Test Interior of Front Door

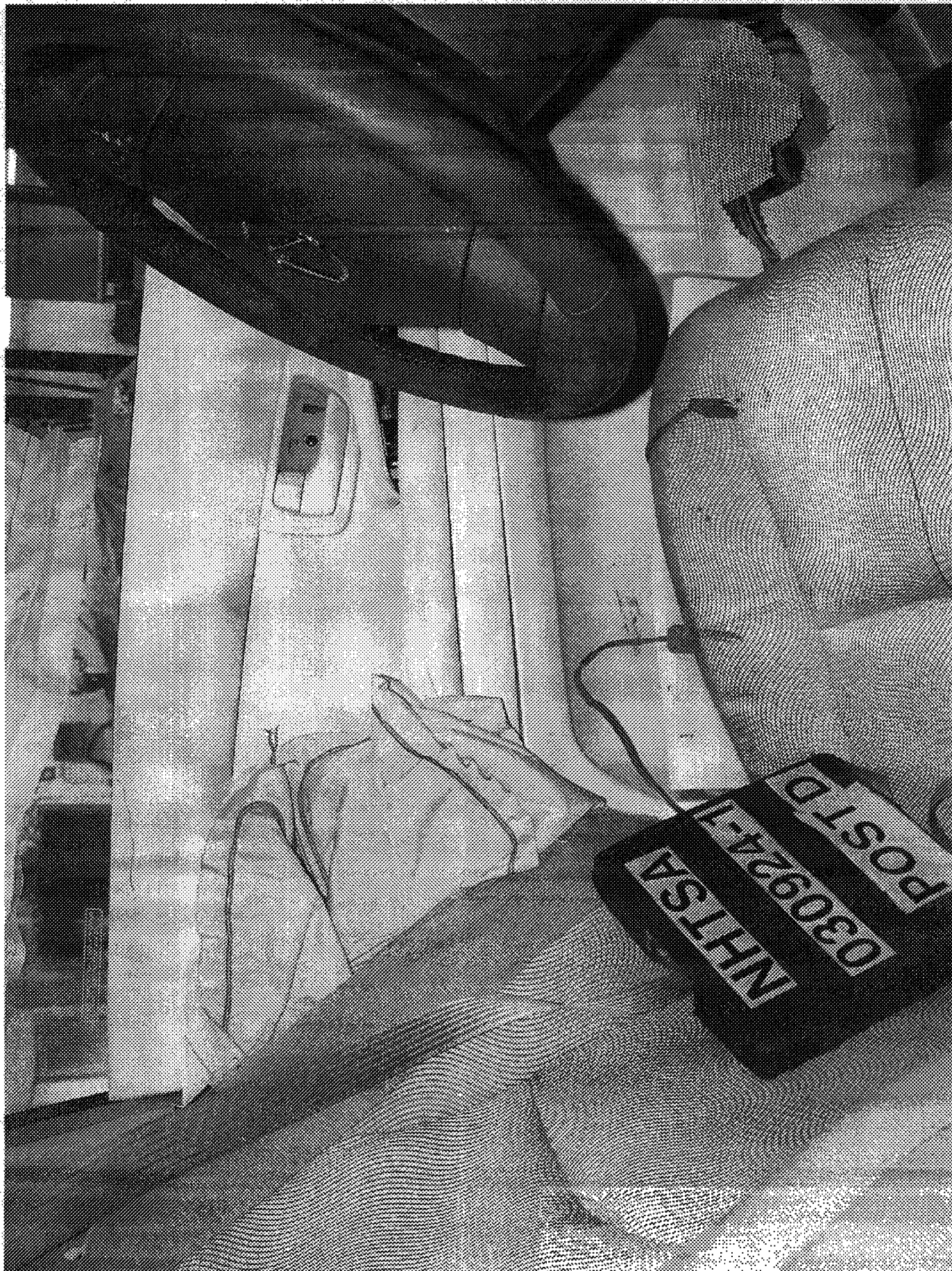


Figure A-36 Post-Test Interior of Front Door Showing SID HIII Impact Locations



Figure A-37 Post-Test Front SID HIII Contact - View 1



Figure A-38 Post-Test Front SID HIII Contact - View 2

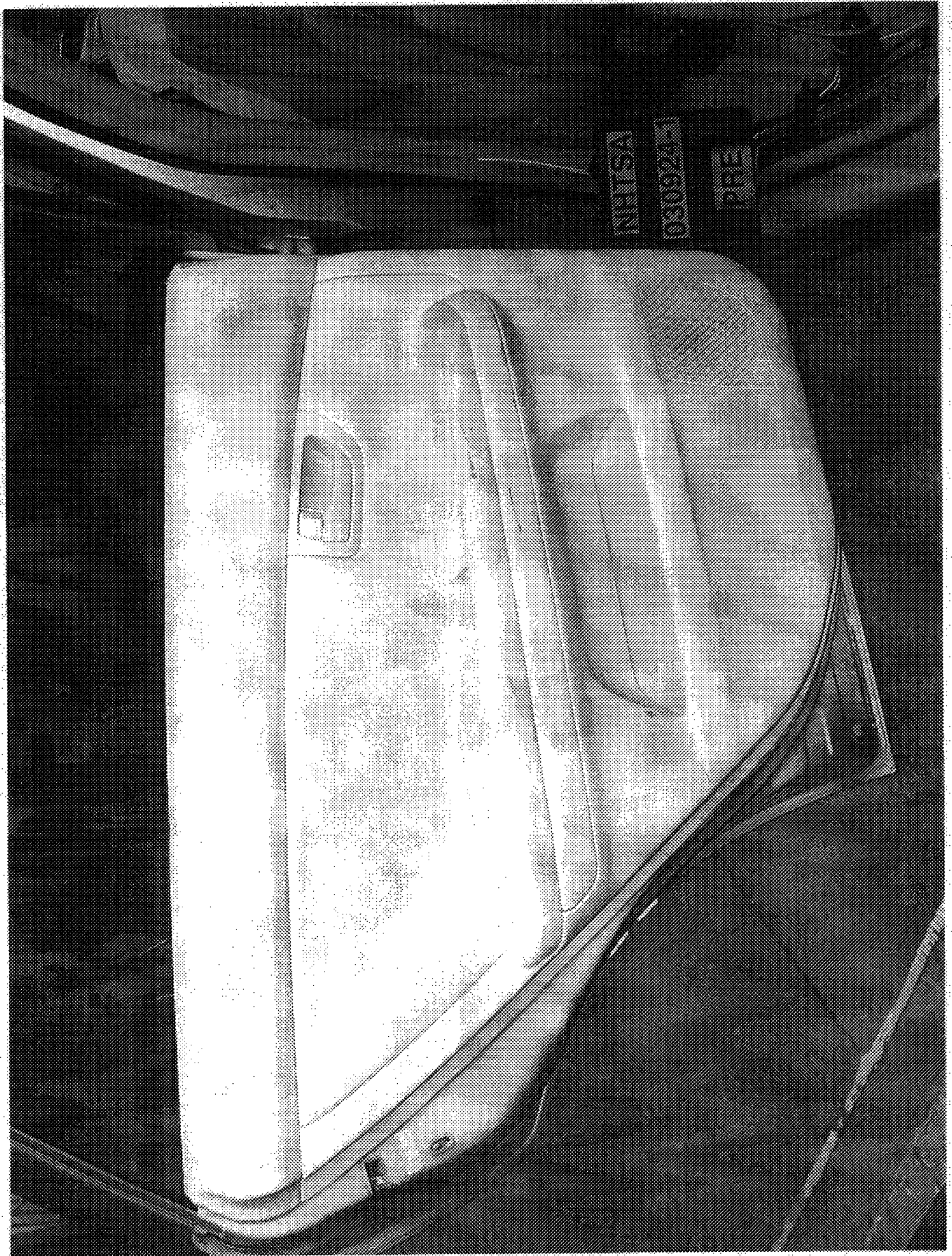


Figure A-39 Pre-Test Interior of Rear Panel



Figure A-40 Post-Test Interior of Rear Panel Showing SID HIII Impact Locations



Figure A-41 Post-Test Rear SID HIII Contact View

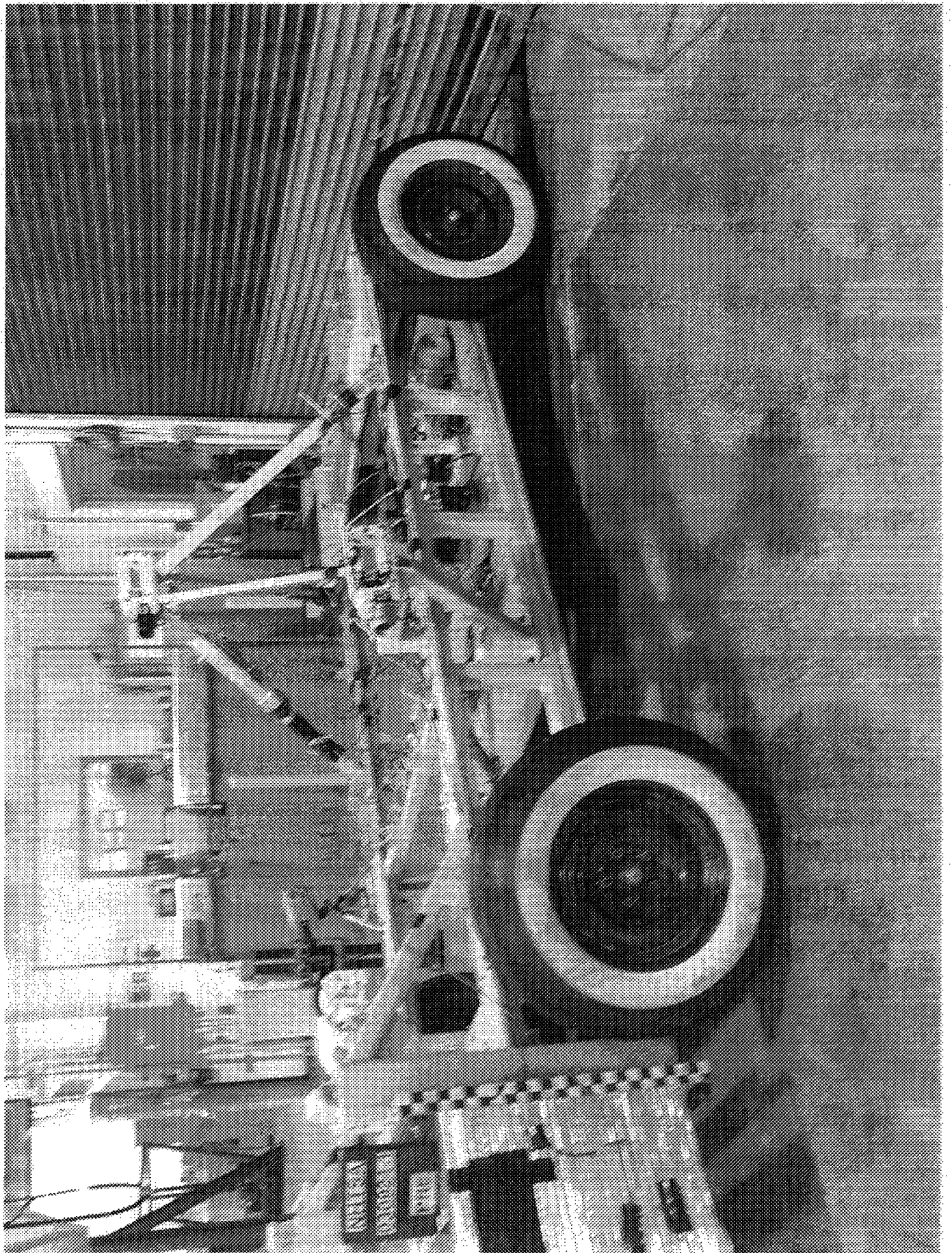


Figure A-42 Pre-Test Left Side View of MDB With Impactor Face in Position



Figure A-43 Pre-Test Primary Impact Point View



Figure A-44 Post-Test Primary Impact Point View



Figure A-45 Pre-Test Secondary Impact Point View

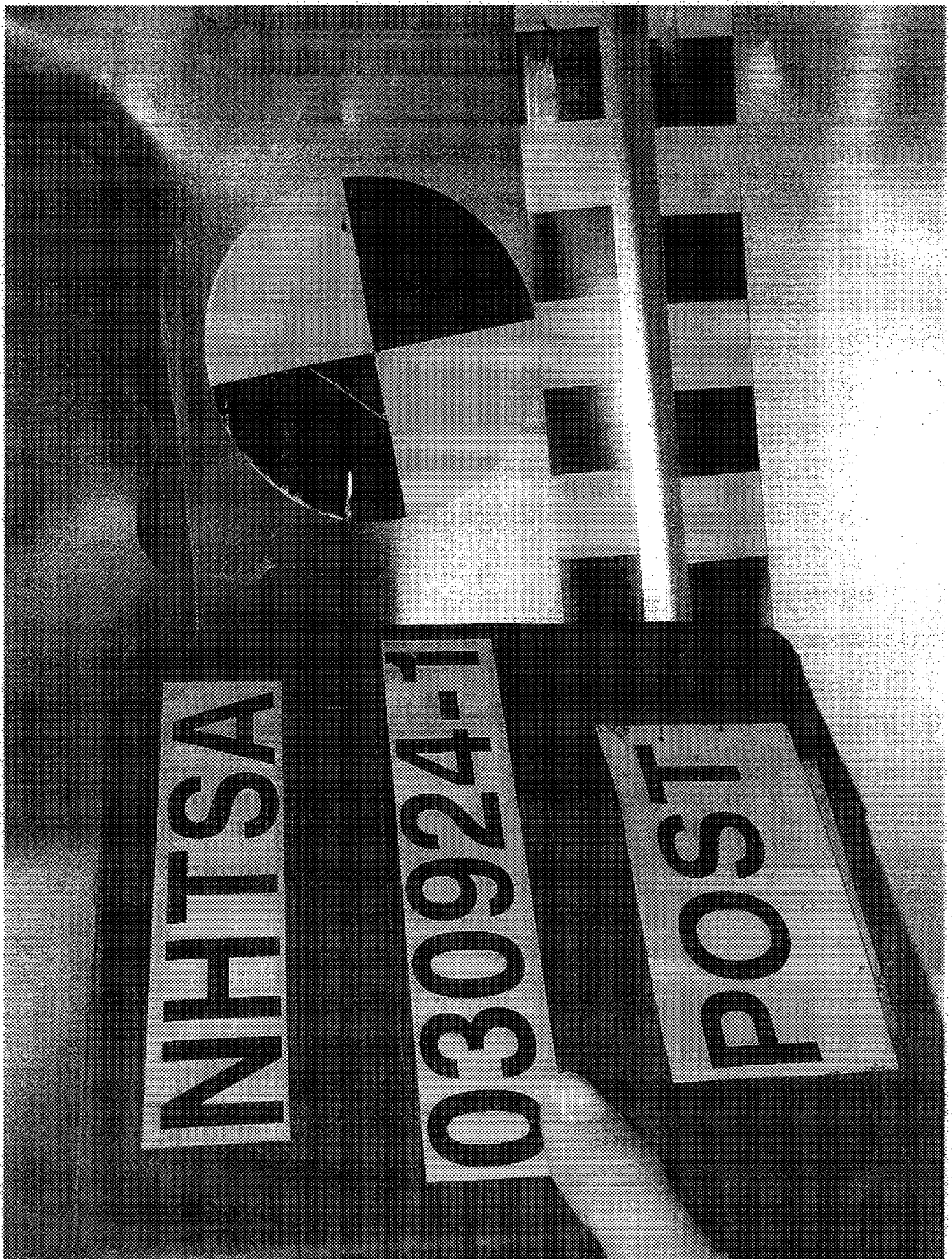


Figure A-46 Post-Test Secondary Impact Point View

MFD BY: TOYOTA MOTOR CORPORATION
GVWR: 2380KG (5245LB)
GAWR: FRT. 1300KG (2865LB) WITH 225/65R17
17X6 1/2JJ RIMS, AT 210KPA (30PSI) COLD,
RR. 1300KG (2865LB) WITH 225/65R17
17X6 1/2JJ RIMS, AT 210KPA (30PSI) COLD.

7

GRAVE

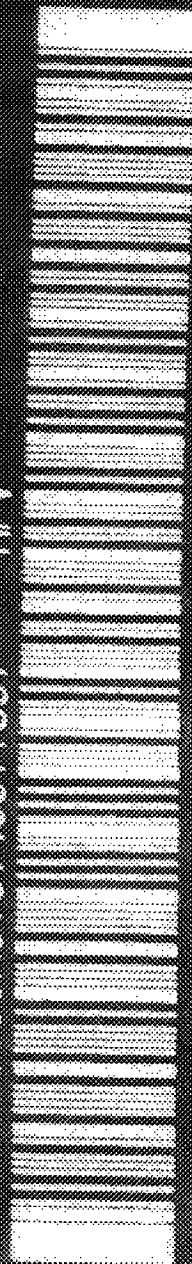
WIRE

N

06/03

THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR
VEHICLE SAFETY AND THEFT PREVENTION STANDARDS IN EFFECT ON
THE DATE OF MANUFACTURE SHOWN ABOVE.

JTJGA31U940011659 MPV



C/TR: 8R6/FA00
A/TM: -01A/U151E

MCU33L-AWAGKA
MADE IN JAPAN

825

J

Figure A-47 Vehicle Certification Label View

SRS DO NOT OBSERVE COUS NE PAS OBSERVER PRO POU SRS VOM DEN DIE BESCH SIEH

TIRE - LOADING INFORMATION	
•CHARGE MAXIMALE DU VEHICULE 420kg (925 LIVRES) •PERSONNES AVANT 2 ARRIERE 3 TOTAL 5 •DIMENSION DES PNEUS 225/65R17 101S •PRESSION DE PNEUS 235/55R18 99V (kPa (LB/PO 2)) AU POIDS MAXIMAL DU VEHICULE CHARGE AVANT 210(30) ARRIERE 210(30) POUR DE PLUS AMPLES DETAILS, VOIR LE MANUEL DU PROPRIETAIRE	•VEHICLE CAPACITY WEIGHT 420kg (925 lbs) •OCCUPANTS FRT.2 RR.3 TOTAL 5 •TIRE SIZE 225/65R17 101S P235/55R18 99V •COLD TIRE PRESSURE (kPa (psi)) UP TO VEHICLE CAPACITY WEIGHT FRT.210(30) RR.210(30) SEE OWNER'S MANUAL FOR ADDITIONAL INFORMATION

48110

2 Q

Figure A-48 Vehicle Recommended Tire Pressure Label View

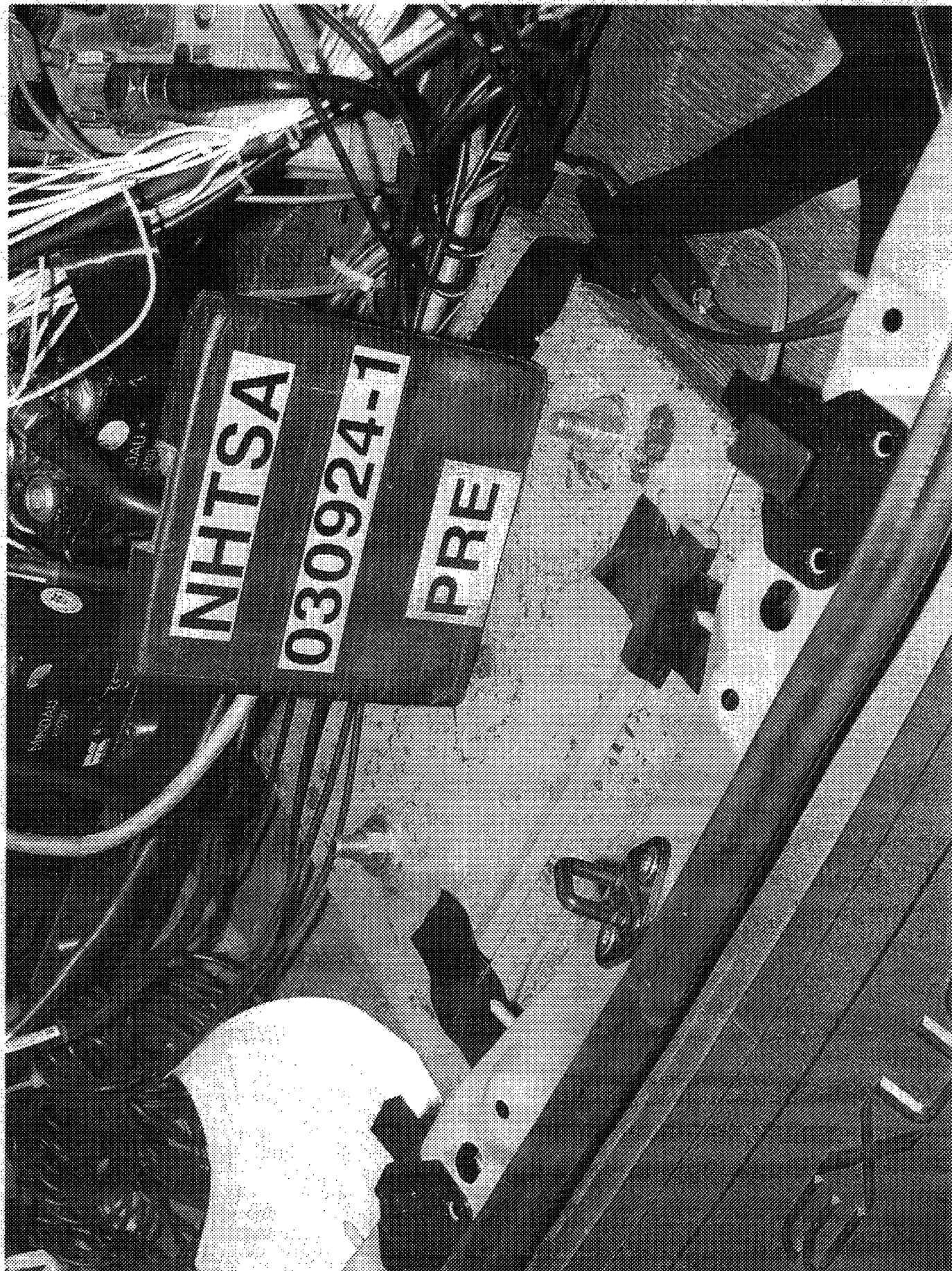


Figure A-49 Pre-Test Vehicle Ballast View

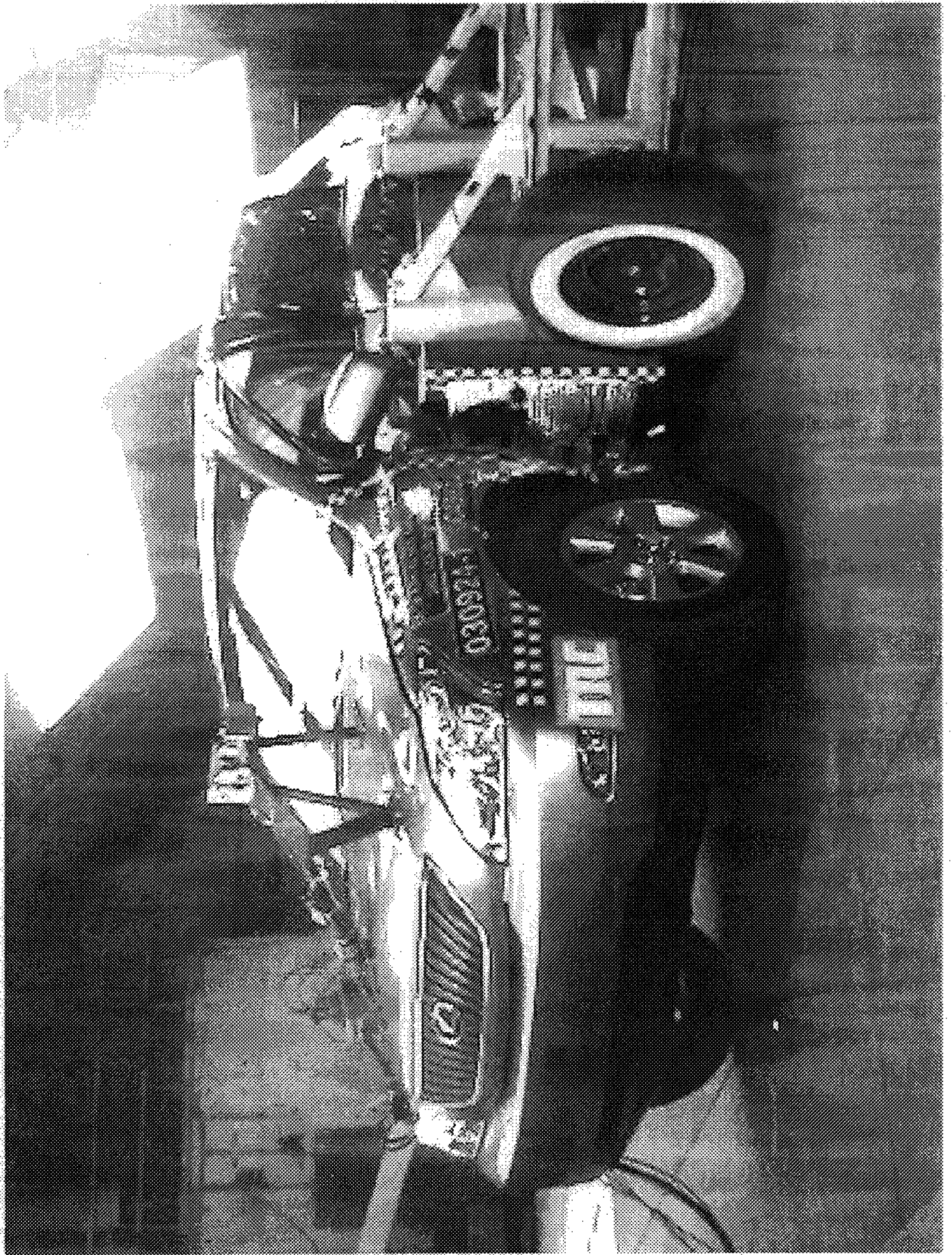


Figure A-50 Impact Event



Figure A-51 Pre-Test Fuel Cap



Figure A-52 Post-Test Fuel Cap



Figure A-53 FMVSS 301 Rollover View at 90°

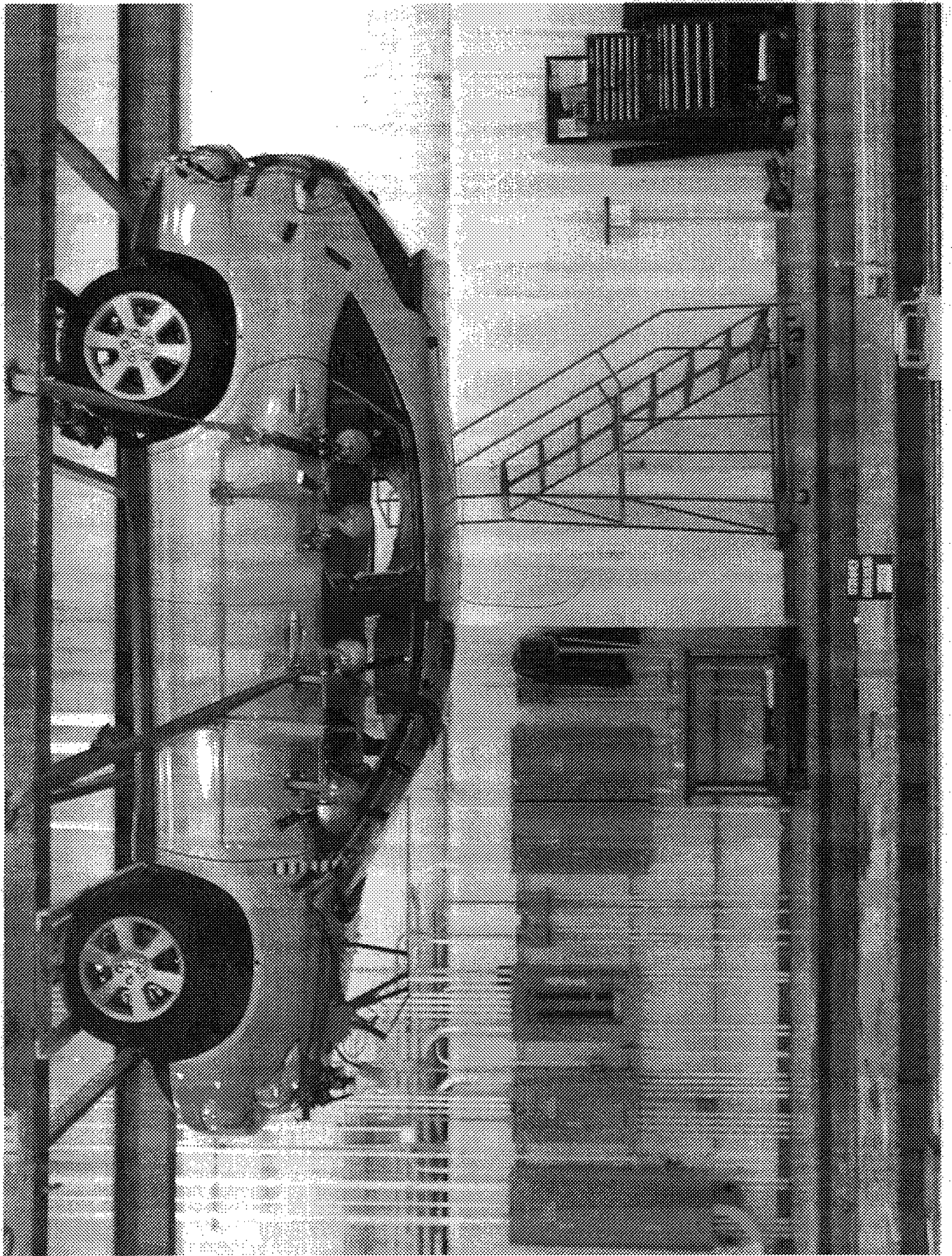


Figure A-54 FMVSS 301 Rollover View at 180°

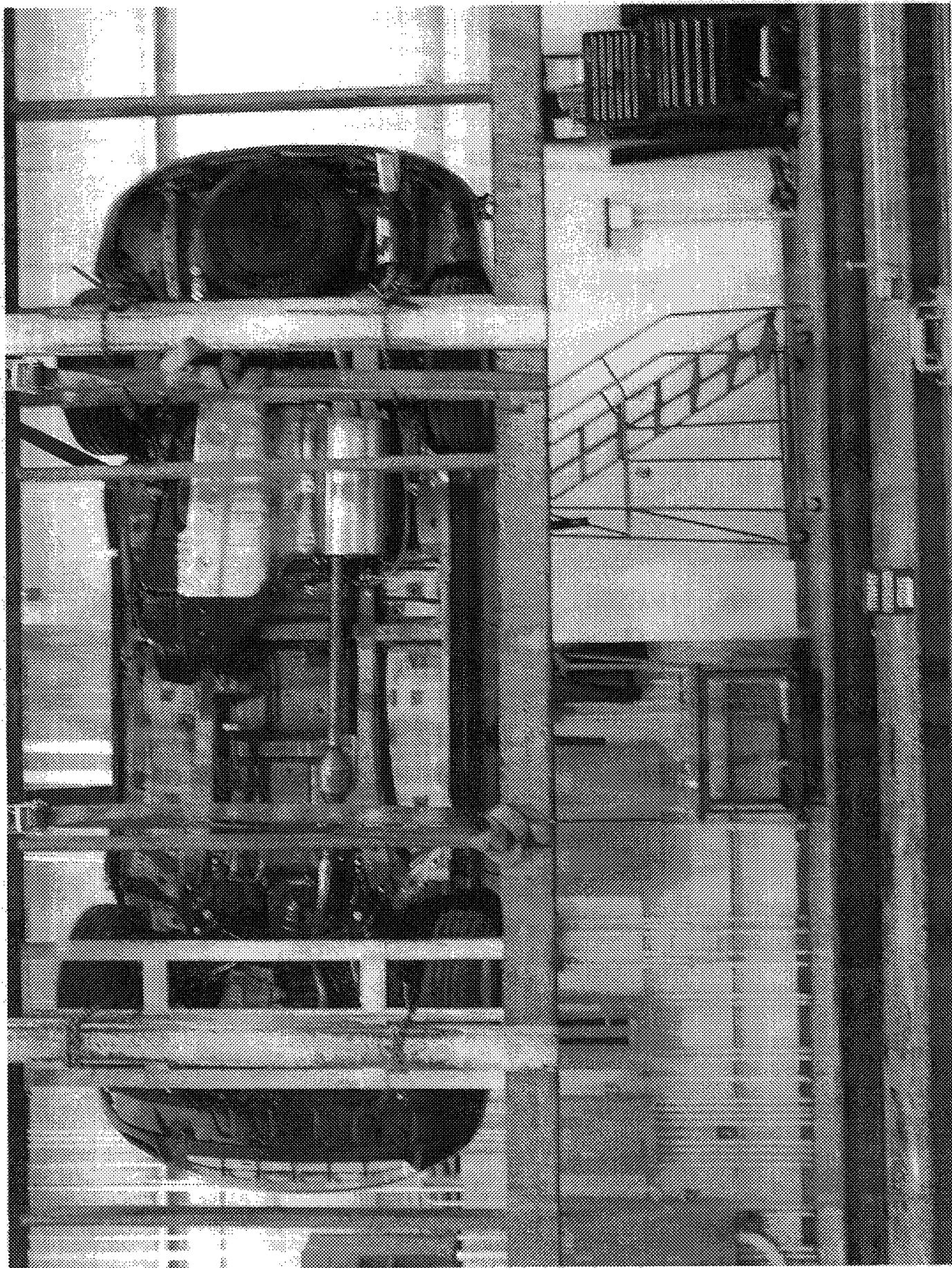


Figure A-55 FMVSS 301 Rollover View at 270°

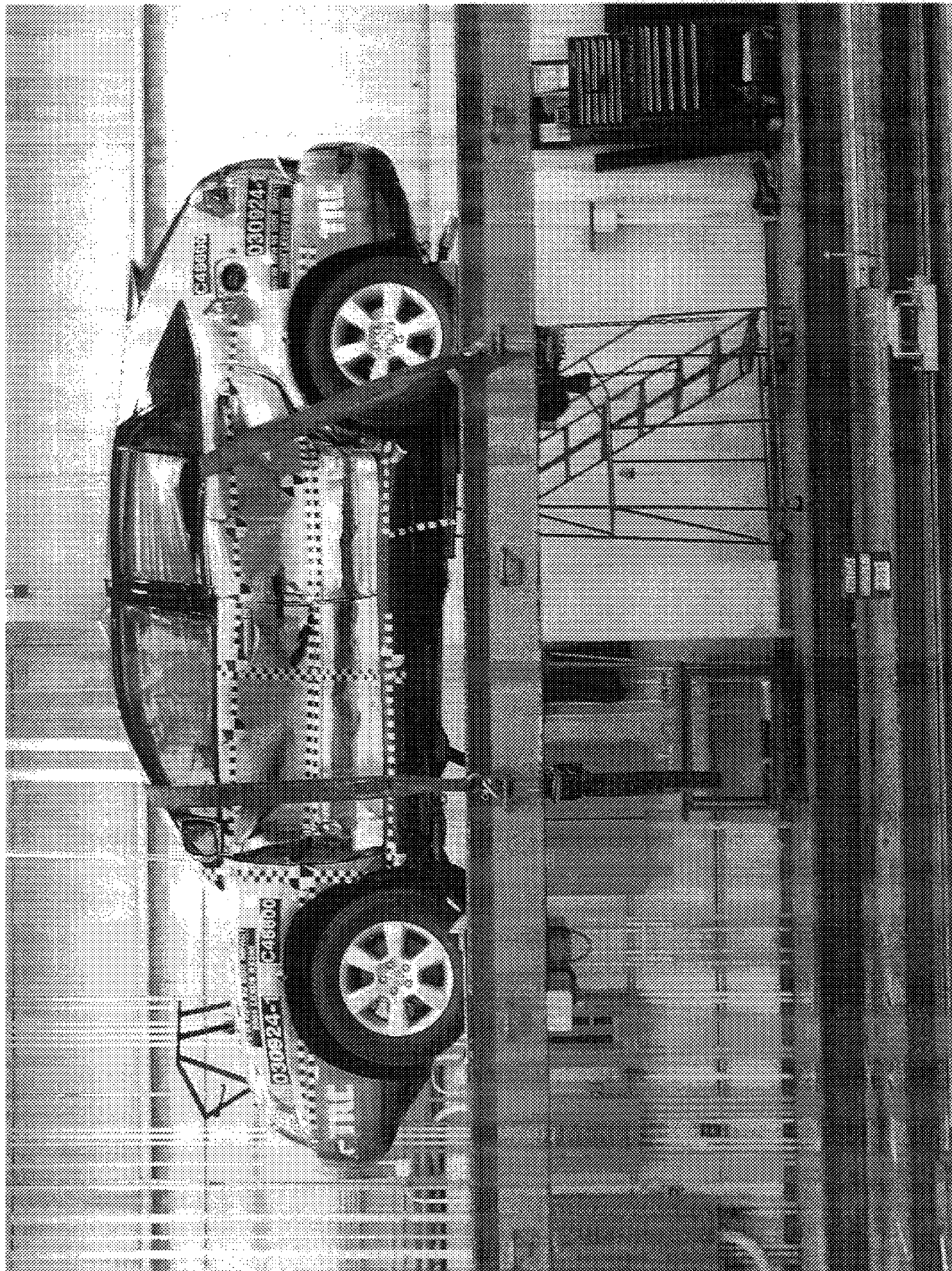


Figure A-56 FMVSS 301 Rollover View at 360°

Appendix B

Data Plots

Table of Data Plots

Driver and Passenger Dummy Instrumentation Plots

Acceleration Data - Filter Class 1000

Integration Data - Filter Class 180

Force Data - Filter Class 1000

Moment Data - Filter Class 600

Contact Data - Filter Class 1000

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
1	Driver Head X-Axis Acceleration	B-10
2	Driver Head X-Axis Velocity	B-11
3	Driver Head Y-Axis Acceleration	B-12
4	Driver Head Y-Axis Velocity	B-13
5	Driver Head Z-Axis Acceleration	B-14
6	Driver Head Z-Axis Velocity	B-15
7	Driver Head Resultant Acceleration	B-16
8	Driver Head Resultant Redundant Acceleration	B-17
9	Driver Neck X-Axis Shear Force	B-18
10	Driver Neck Y-Axis Shear Force	B-19
11	Driver Neck Z-Axis Axial Force	B-20
12	Driver Neck Moment about X Axis	B-21
13	Driver Neck Moment about Y Axis	B-22
14	Driver Neck Moment about Z Axis	B-23
15	Driver Neck Occipital Condyle Moment about X Axis	B-24
16	Driver Upper Rib Y-Axis Acceleration	B-25
17	Driver Upper Rib Y-Axis Velocity	B-26
18	Driver Lower Rib Y-Axis Acceleration	B-27
19	Driver Lower Rib Y-Axis Velocity	B-28
20	Driver Lower Spine Y-Axis Acceleration	B-29
21	Driver Lower Spine Y-Axis Velocity	B-30
22	Driver Pelvis Y-Axis Acceleration	B-31
23	Driver Pelvis Y-Axis Velocity	B-32
24	Left Rear Passenger Head X-Axis Acceleration	B-33

Table of Data Plots (Continued)

Driver and Passenger Dummy Instrumentation Plots (Continued)

Acceleration Data - Filter Class 1000

Integration Data - Filter Class 180

Force Data - Filter Class 1000

Moment Data - Filter Class 600

Contact Data - Filter Class 1000

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
25	Left Rear Passenger Head X-Axis Velocity	B-34
26	Left Rear Passenger Head Y-Axis Acceleration	B-35
27	Left Rear Passenger Head Y-Axis Velocity	B-36
28	Left Rear Passenger Head Z-Axis Acceleration	B-37
29	Left Rear Passenger Head Z-Axis Velocity	B-38
30	Left Rear Passenger Head Resultant Acceleration	B-39
31	Left Rear Passenger Head Resultant Redundant Acceleration	B-40
32	Left Rear Passenger Neck X-Axis Shear Force	B-41
33	Left Rear Passenger Neck Y-Axis Shear Force	B-42
34	Left Rear Passenger Neck Z-Axis Axial Force	B-43
35	Left Rear Passenger Neck Moment about X Axis	B-44
36	Left Rear Passenger Neck Moment about Y Axis	B-45
37	Left Rear Passenger Neck Moment about Z Axis	B-46
38	Left Rear Passenger Neck Occipital Condyle Moment about X Axis	B-47
39	Left Rear Passenger Upper Rib Y-Axis Acceleration	B-48
40	Left Rear Passenger Upper Rib Y-Axis Velocity	B-49
41	Left Rear Passenger Lower Rib Y-Axis Acceleration	B-50
42	Left Rear Passenger Lower Rib Y-Axis Velocity	B-51
43	Left Rear Passenger Lower Spine Y-Axis Acceleration	B-52
44	Left Rear Passenger Lower Spine Y-Axis Velocity	B-53
45	Left Rear Passenger Pelvis Y-Axis Acceleration	B-54
46	Left Rear Passenger Pelvis Y-Axis Velocity	B-55

Table of Data Plots (Continued)

Driver and Passenger Dummy Instrumentation Plots

Acceleration Data - Filter Class 1000 - Redundant

Integration Data - Filter Class 180 - Redundant

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
47	Driver Head X-Axis Redundant Acceleration	B-57
48	Driver Head X-Axis Redundant Velocity	B-58
49	Driver Head Y-Axis Redundant Acceleration	B-59
50	Driver Head Y-Axis Redundant Velocity	B-60
51	Driver Head Z-Axis Redundant Acceleration	B-61
52	Driver Head Z-Axis Redundant Velocity	B-62
53	Driver Upper Rib Y-Axis Redundant Acceleration	B-63
54	Driver Upper Rib Y-Axis Redundant Velocity	B-64
55	Driver Lower Rib Y-Axis Redundant Acceleration	B-65
56	Driver Lower Rib Y-Axis Redundant Velocity	B-66
57	Driver Lower Spine Y-Axis Redundant Acceleration	B-67
58	Driver Lower Spine Y-Axis Redundant Velocity	B-68
59	Driver Pelvis Y-Axis Redundant Acceleration	B-69
60	Driver Pelvis Y-Axis Redundant Velocity	B-70
61	Driver Shoulder Contact Switch	B-71
62	Driver Pelvis Contact Switch	B-72
63	Left Rear Passenger Head X-Axis Redundant Acceleration	B-73
64	Left Rear Passenger Head X-Axis Redundant Velocity	B-74
65	Left Rear Passenger Head Y-Axis Redundant Acceleration	B-75
66	Left Rear Passenger Head Y-Axis Redundant Velocity	B-76
67	Left Rear Passenger Head Z-Axis Redundant Acceleration	B-77
68	Left Rear Passenger Head Z-Axis Redundant Velocity	B-78
69	Left Rear Passenger Upper Rib Y-Axis Redundant Acceleration	B-79
70	Left Rear Passenger Upper Rib Y-Axis Redundant Velocity	B-80
71	Left Rear Passenger Lower Rib Y-Axis Redundant Acceleration	B-81
72	Left Rear Passenger Lower Rib Y-Axis Redundant Velocity	B-82
73	Left Rear Passenger Lower Spine Y-Axis Redundant Acceleration	B-83
74	Left Rear Passenger Lower Spine Y-Axis Redundant Velocity	B-84
75	Left Rear Passenger Pelvis Y-Axis Redundant Acceleration	B-85
76	Left Rear Passenger Pelvis Y-Axis Redundant Velocity	B-86
77	Left Rear Passenger Shoulder Contact Switch	B-87
78	Left Rear Passenger Pelvis Contact Switch	B-88

Table of Data Plots (Continued)
Test Vehicle Instrumentation Plots
Acceleration Data - Filter Class 60
Integration Data - Filter Class 180

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
79	Right Side Sill at Front Seat X-Axis Acceleration	B-90
80	Right Side Sill at Front Seat X-Axis Velocity	B-91
81	Right Side Sill at Front Seat Y-Axis Acceleration	B-92
82	Right Side Sill at Front Seat Y-Axis Velocity	B-93
83	Right Side Sill at Front Seat Z-Axis Acceleration	B-94
84	Right Side Sill at Front Seat Z-Axis Velocity	B-95
85	Right Side Sill at Front Seat Resultant Acceleration	B-96
86	Right Side Sill at Rear Seat X-Axis Acceleration	B-97
87	Right Side Sill at Rear Seat X-Axis Velocity	B-98
88	Right Side Sill at Rear Seat Y-Axis Acceleration	B-99
89	Right Side Sill at Rear Seat Y-Axis Velocity	B-100
90	Right Side Sill at Rear Seat Z-Axis Acceleration	B-101
91	Right Side Sill at Rear Seat Z-Axis Velocity	B-102
92	Right Side Sill at Rear Seat Resultant Acceleration	B-103
93	Rear Floorpan Above Axle X-Axis Acceleration	B-104
94	Rear Floorpan Above Axle X-Axis Velocity	B-105
95	Rear Floorpan Above Axle Y-Axis Acceleration	B-106
96	Rear Floorpan Above Axle Y-Axis Velocity	B-107
97	Rear Floorpan Above Axle Z-Axis Acceleration	B-108
98	Rear Floorpan Above Axle Z-Axis Velocity	B-109
99	Rear Floorpan Above Axle Resultant Acceleration	B-110
100	Left Side Sill at Front Seat Y-Axis Acceleration	B-111
101	Left Side Sill at Front Seat Y-Axis Velocity	B-112
102	Left Side Sill at Front Seat Y-Axis Displacement	B-113

Table of Data Plots (Continued)
Test Vehicle Instrumentation Plots (Continued)
Acceleration Data - Filter Class 60
Integration Data - Filter Class 180

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
103	Left Side Sill at Rear Seat Y-Axis Acceleration	B-114
104	Left Side Sill at Rear Seat Y-Axis Velocity	B-115
105	Left Side Sill at Rear Seat Y-Axis Displacement	B-116
106	Right Rear Occupant Compartment Y-Axis Acceleration	B-117
107	Right Rear Occupant Compartment Y-Axis Velocity	B-118
108	Right Rear Occupant Compartment Y-Axis Displacement	B-119
109	Left Lower A-Post Y-Axis Acceleration	B-120
110	Left Lower A-Post Y-Axis Velocity	B-121
111	Left Middle A-Post Y-Axis Acceleration	B-122
112	Left Middle A-Post Y-Axis Velocity	B-123
113	Left Lower B-Post Y-Axis Acceleration	B-124
114	Left Lower B-Post Y-Axis Velocity	B-125
115	Left Middle B-Post Y-Axis Acceleration	B-126
116	Left Middle B-Post Y-Axis Velocity	B-127
117	Left Front Seat Track Y-Axis Acceleration	B-128
118	Left Front Seat Track Y-Axis Velocity	B-129
119	Left Rear Seat Track Y-Axis Acceleration	B-130
120	Left Rear Seat Track Y-Axis Velocity	B-131
121	Vehicle Center of Gravity X-Axis Acceleration	B-132
122	Vehicle Center of Gravity X-Axis Velocity	B-133
123	Vehicle Center of Gravity Y-Axis Acceleration	B-134
124	Vehicle Center of Gravity Y-Axis Velocity	B-135
125	Vehicle Center of Gravity Z-Axis Acceleration	B-136
126	Vehicle Center of Gravity Z-Axis Velocity	B-137
127	Vehicle Center of Gravity Resultant Acceleration	B-138

Table of Data Plots (Continued)
MDB Instrumentation Plots
Acceleration Data - Filter Class 60
Integration Data - Filter Class 180

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
128	MDB Center of Gravity X-Axis Acceleration	B-140
129	MDB Center of Gravity X-Axis Velocity	B-141
130	MDB Center of Gravity Y-Axis Acceleration	B-142
131	MDB Center of Gravity Y-Axis Velocity	B-143
132	MDB Center of Gravity Z-Axis Acceleration	B-144
133	MDB Center of Gravity Z-Axis Velocity	B-145
134	MDB Center of Gravity Resultant Acceleration	B-146
135	MDB Left Rear X-Axis Acceleration	B-147
136	MDB Left Rear X-Axis Velocity	B-148
137	MDB Left Rear Y-Axis Acceleration	B-149
138	MDB Left Rear Y-Axis Velocity	B-150
139	MDB Right Side Contact Switch	B-151
140	MDB Left Side Contact Switch	B-152

Table of Data Plots (Continued)
Driver and Passenger Dummy Instrumentation Plots
Acceleration Data - FIR Filtered

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
141	Driver Upper Rib Y-Axis Acceleration	B-154
142	Driver Lower Rib Y-Axis Acceleration	B-155
143	Driver Lower Spine Y-Axis Acceleration	B-156
144	Driver Pelvis Y-Axis Acceleration	B-157
145	Left Rear Passenger Upper Rib Y-Axis Acceleration	B-158
146	Left Rear Passenger Lower Rib Y-Axis Acceleration	B-159
147	Left Rear Passenger Lower Spine Y-Axis Acceleration	B-160
148	Left Rear Passenger Pelvis Y-Axis Acceleration	B-161
149	Driver Upper Rib Y-Axis Redundant Acceleration	B-162
150	Driver Lower Rib Y-Axis Redundant Acceleration	B-163
151	Driver Lower Spine Y-Axis Redundant Acceleration	B-164
152	Driver Pelvis Y-Axis Redundant Acceleration	B-165
153	Left Rear Passenger Upper Rib Y-Axis Redundant Acceleration	B-166
154	Left Rear Passenger Lower Rib Y-Axis Redundant Acceleration	B-167
155	Left Rear Passenger Lower Spine Y-Axis Redundant Acceleration	B-168
156	Left Rear Passenger Pelvis Y-Axis Redundant Acceleration	B-169

Driver and Passenger Dummy Instrumentation Plots

Acceleration Data - Filter Class 1000

Integration Data - Filter Class 180

Force Data - Filter Class 1000

Moment Data - Filter Class 600

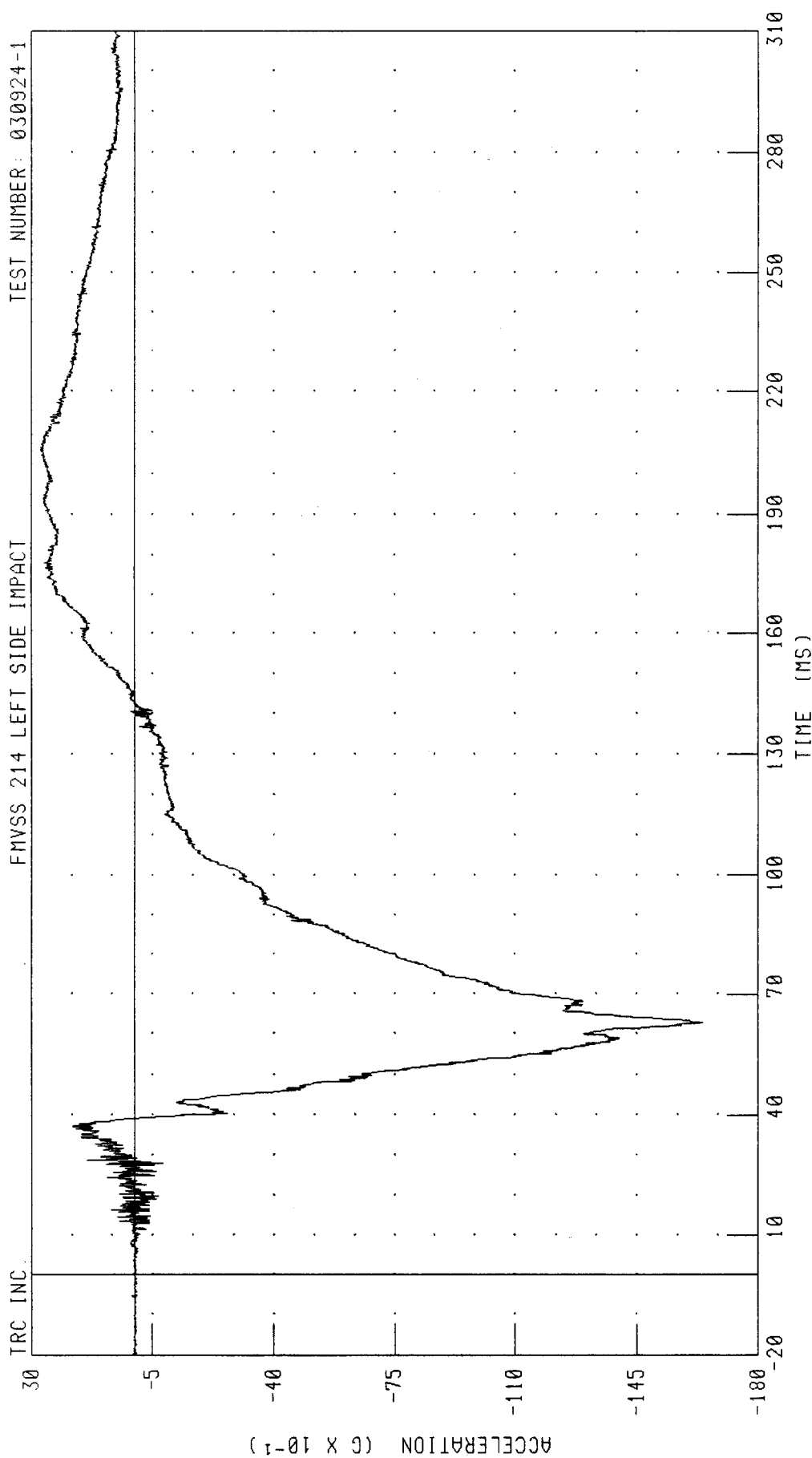
Contact Data - Filter Class 1000

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

DRIVER HEAD X-AXIS ACCELERATION

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030924-1



CHANNEL: HEDXC1 FILTER: CH. CLASS 1000

PEAK DATA: 2.74 G @ 205.60 MS, -16.41 G @ 62.64 MS

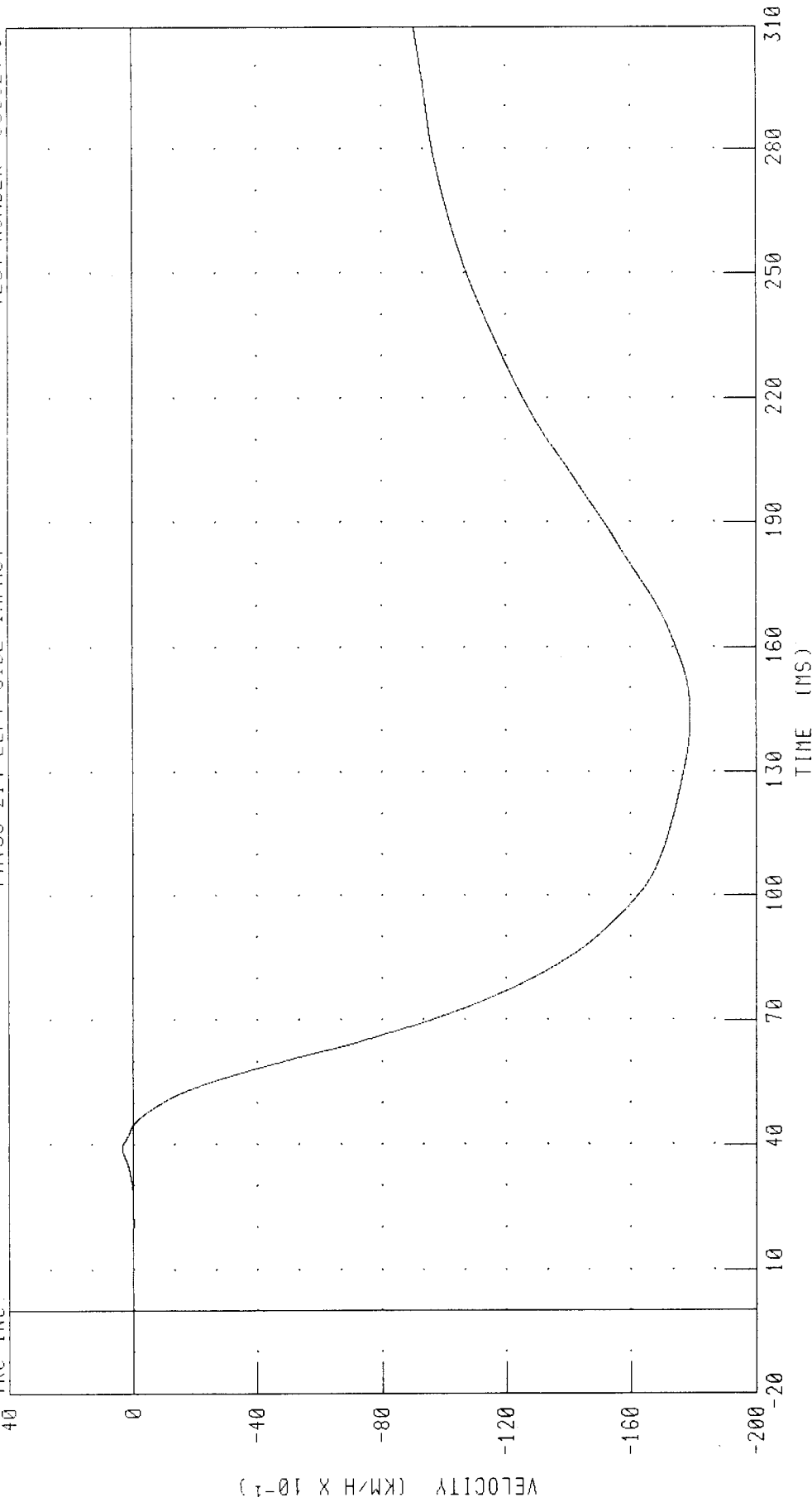
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

DRIVER HEAD X-AXIS VELOCITY

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030924-1

TRC INC.



PEAK DATA 0 36 KM/H @ 39 12 MS, -17 88 KM/H @ 142 48 MS

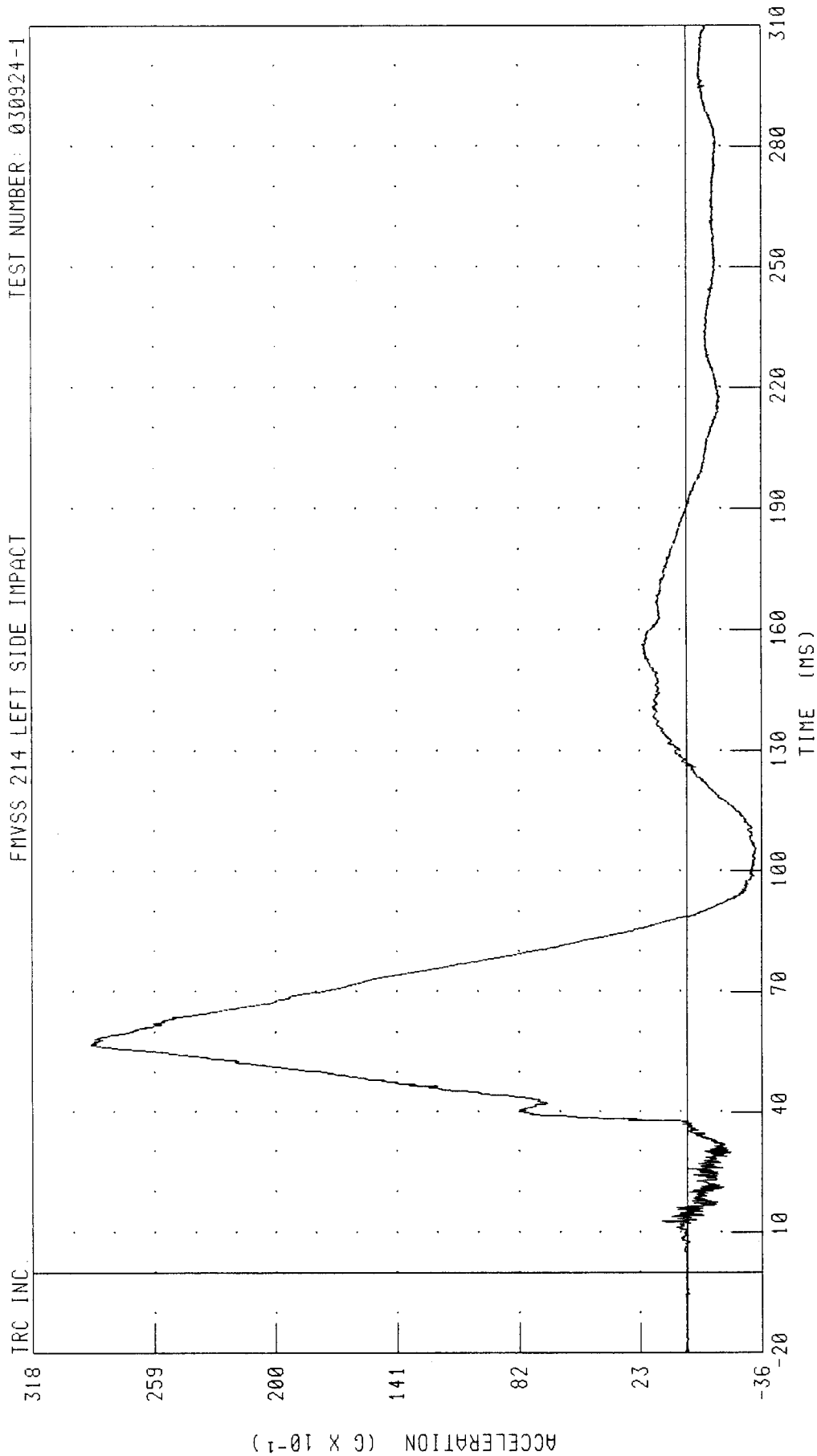
CHANNEL: HEDXV1 FILTER: CH CLASS 180

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

DRIVER HEAD Y-AXIS ACCELERATION

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030924-1



CHANNEL: HEDYG1 FILTER: CH CLASS 1000

PEAK DATA: 28 99 G @ 56 96 MS, -3 35 G @ 105 60 MS

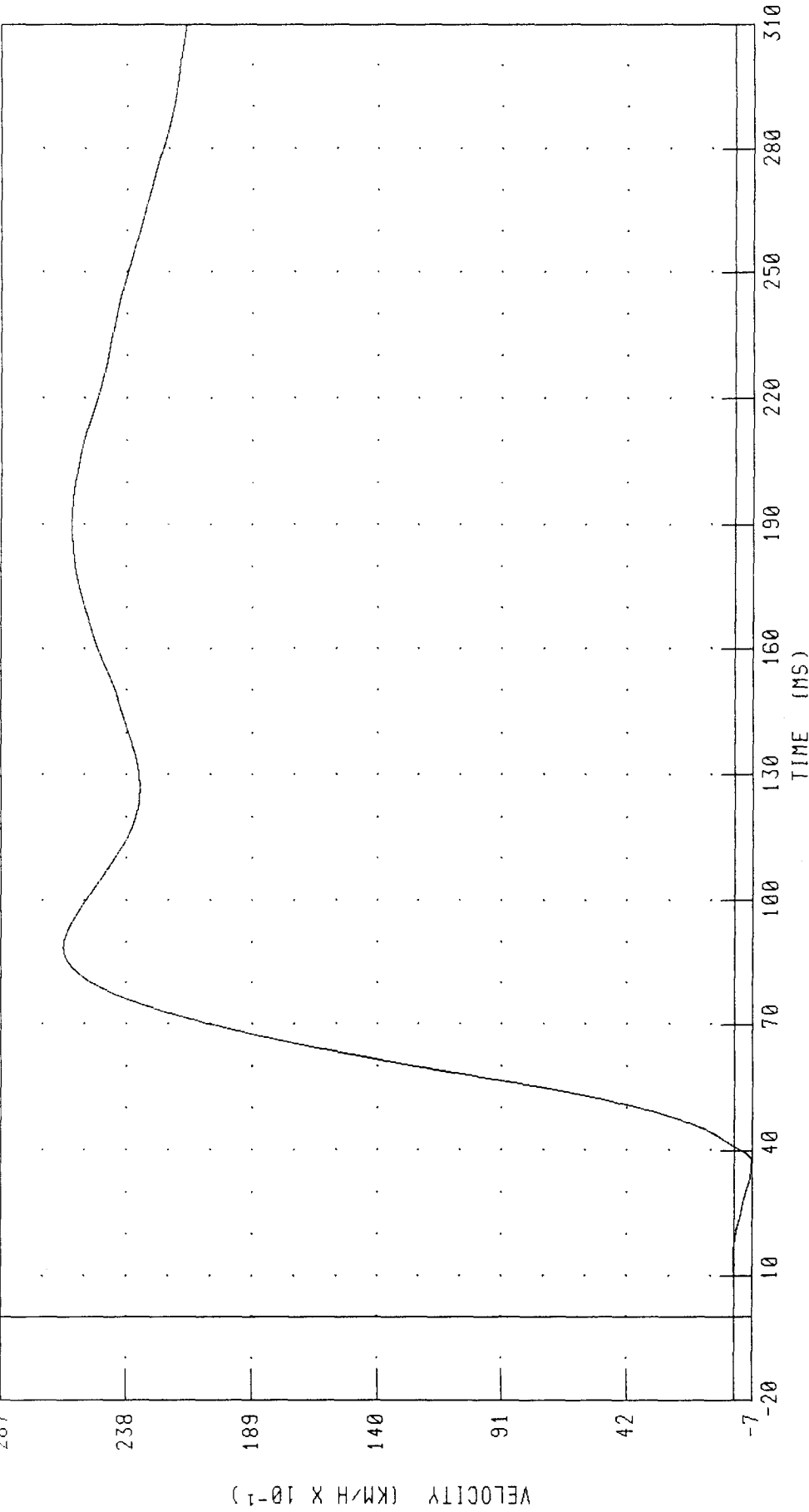
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

DRIVER HEAD Y-AXIS VELOCITY

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030924-1

TRC INC.

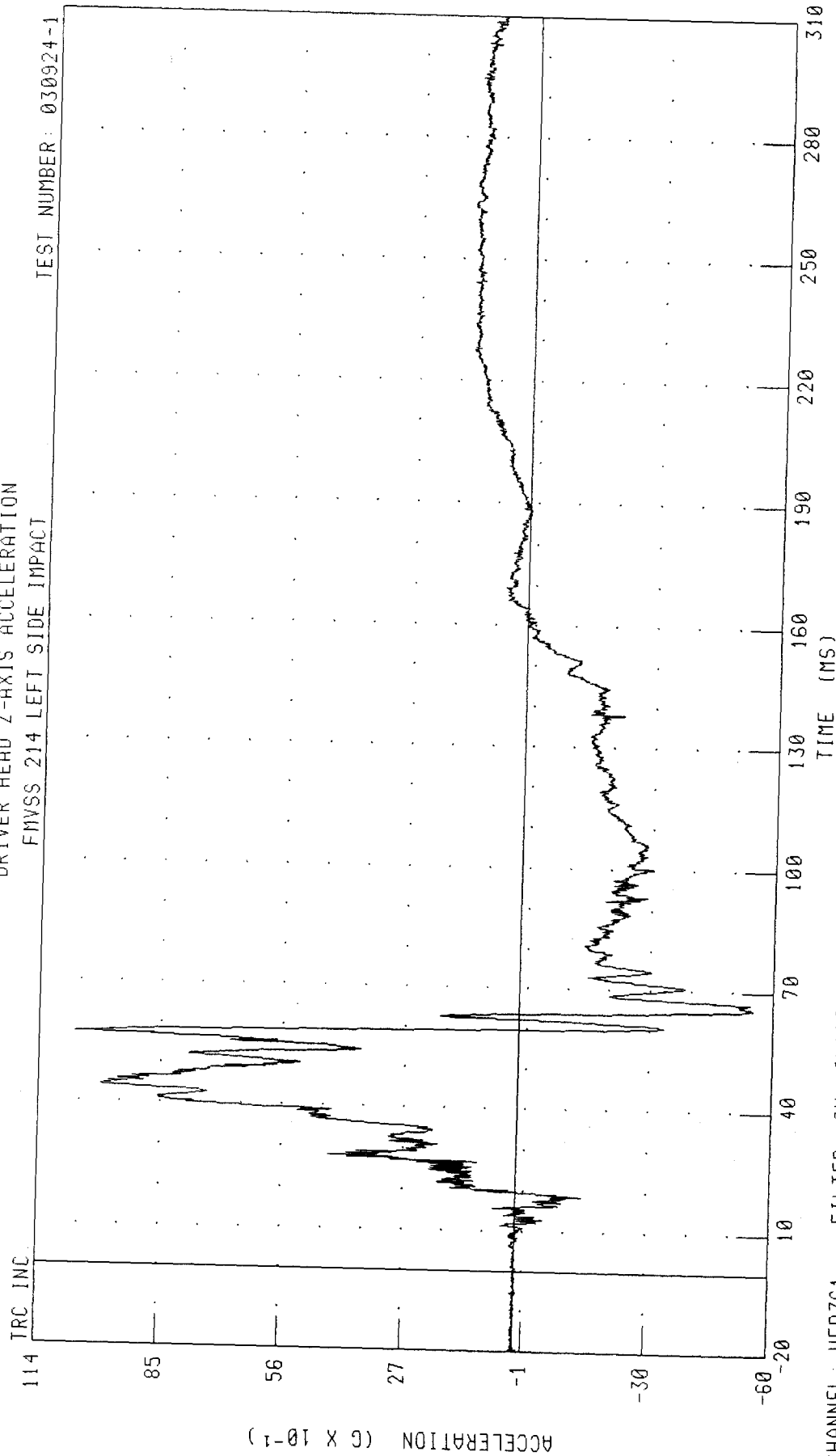


CHANNEL: HEDYV1 FILTER: CH. CLASS 180

PEAK DATA: 26.24 KM/H @ 88.72 MS, -0.67 KM/H @ 37.12 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
 DRIVER HEAD Z-AXIS ACCELERATION
 FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030924-1



CHANNEL: HEDZG1 FILTER: CH CLASS 1000

PEAK DATA 10.57 G @ 57.44 MS, -5.53 G @ 65.68 MS

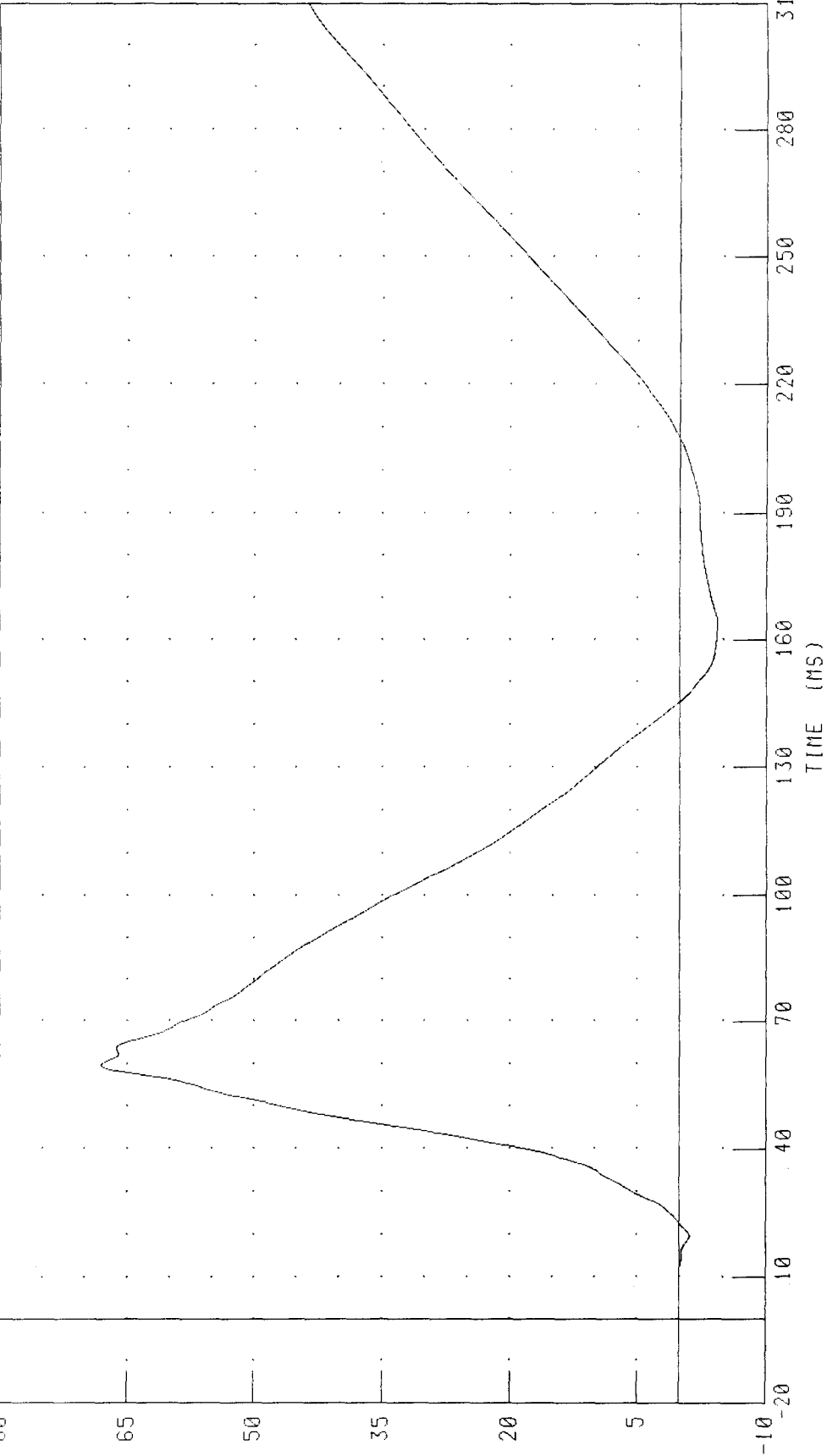
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

DRIVER HEAD Z-AXIS VELOCITY

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030924-1

TRC INC.



CHANNEL: HEDZV1 FILTER: CH CLASS 180

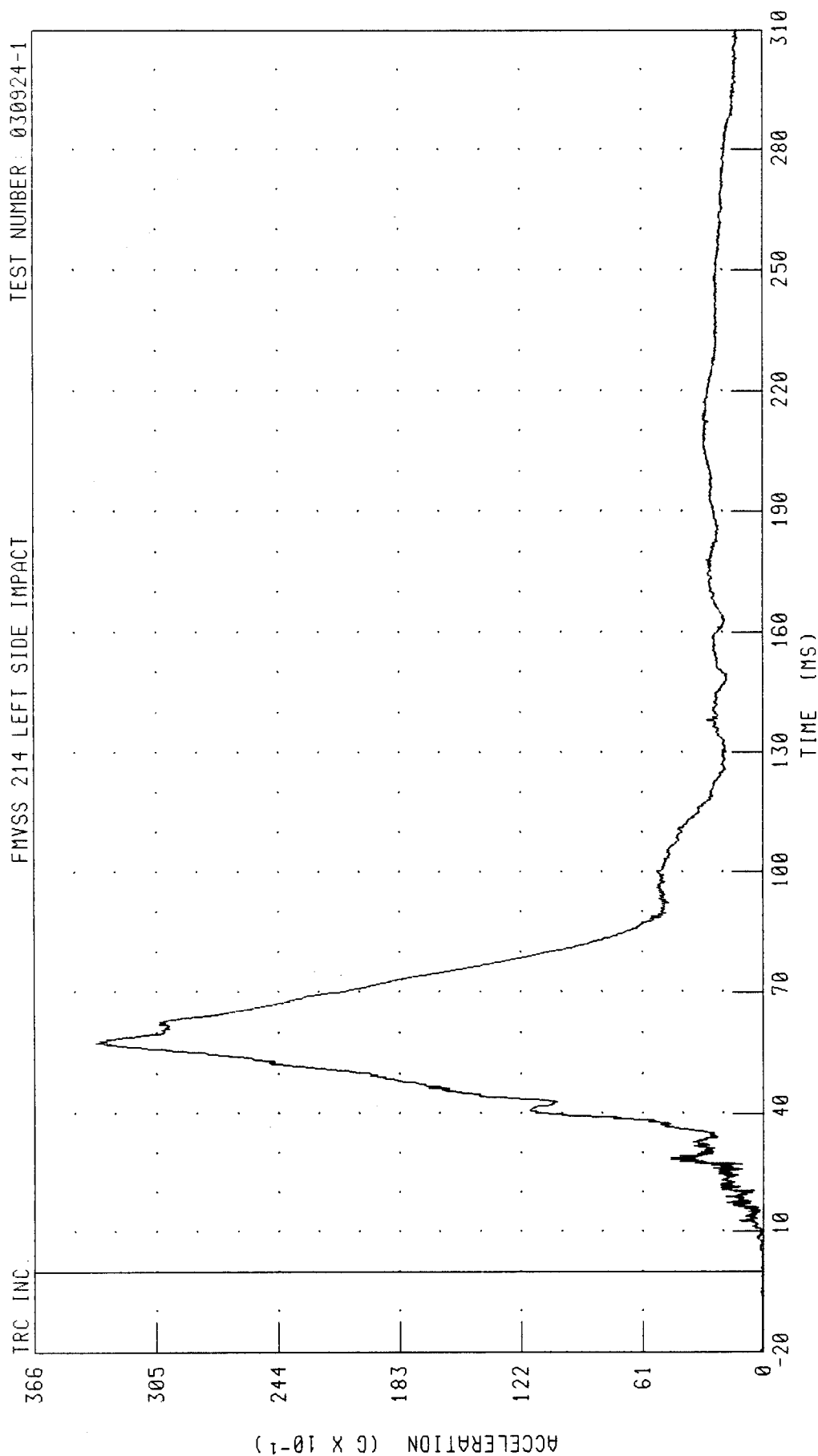
PEAK DATA: 6.81 KM/H @ 59.76 MS, -0.43 KM/H @ 164.00 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

DRIVER HEAD RESULTANT ACCELERATION

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030924-1

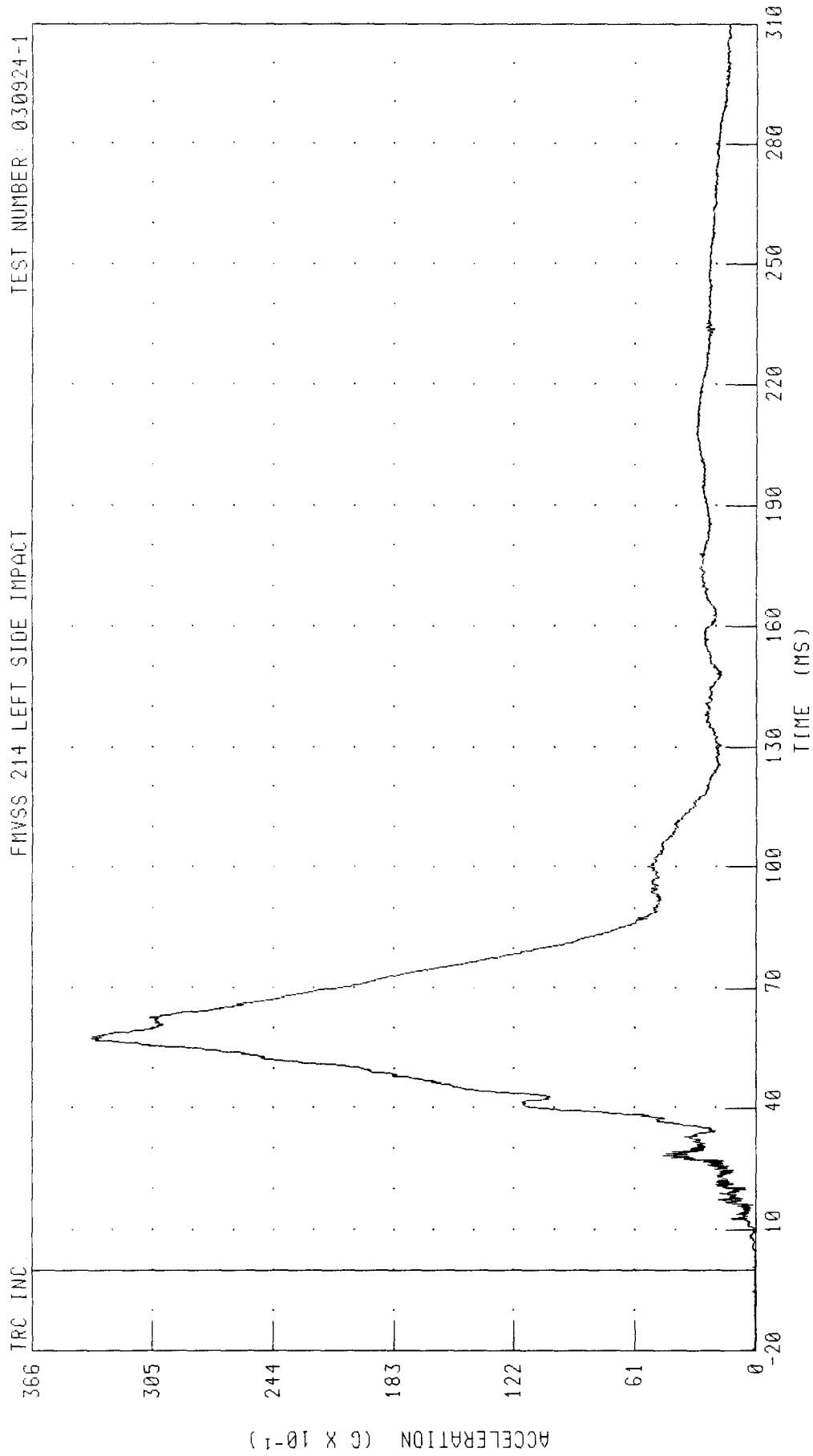


CHANNEL: HEDRC1 FILTER: CH CLASS 1000

PEAK DATA: 33.50 G @ 57.44 MS, 0.01 G @ -17.36 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
DRIVER HEAD RESULTANT REDUNDANT ACCELERATION

FMVSS 214 LEFT SIDE IMPACT TEST NUMBER: 030924-1



CHANNEL: HEDRR1 FILTER: CH CLASS 1000

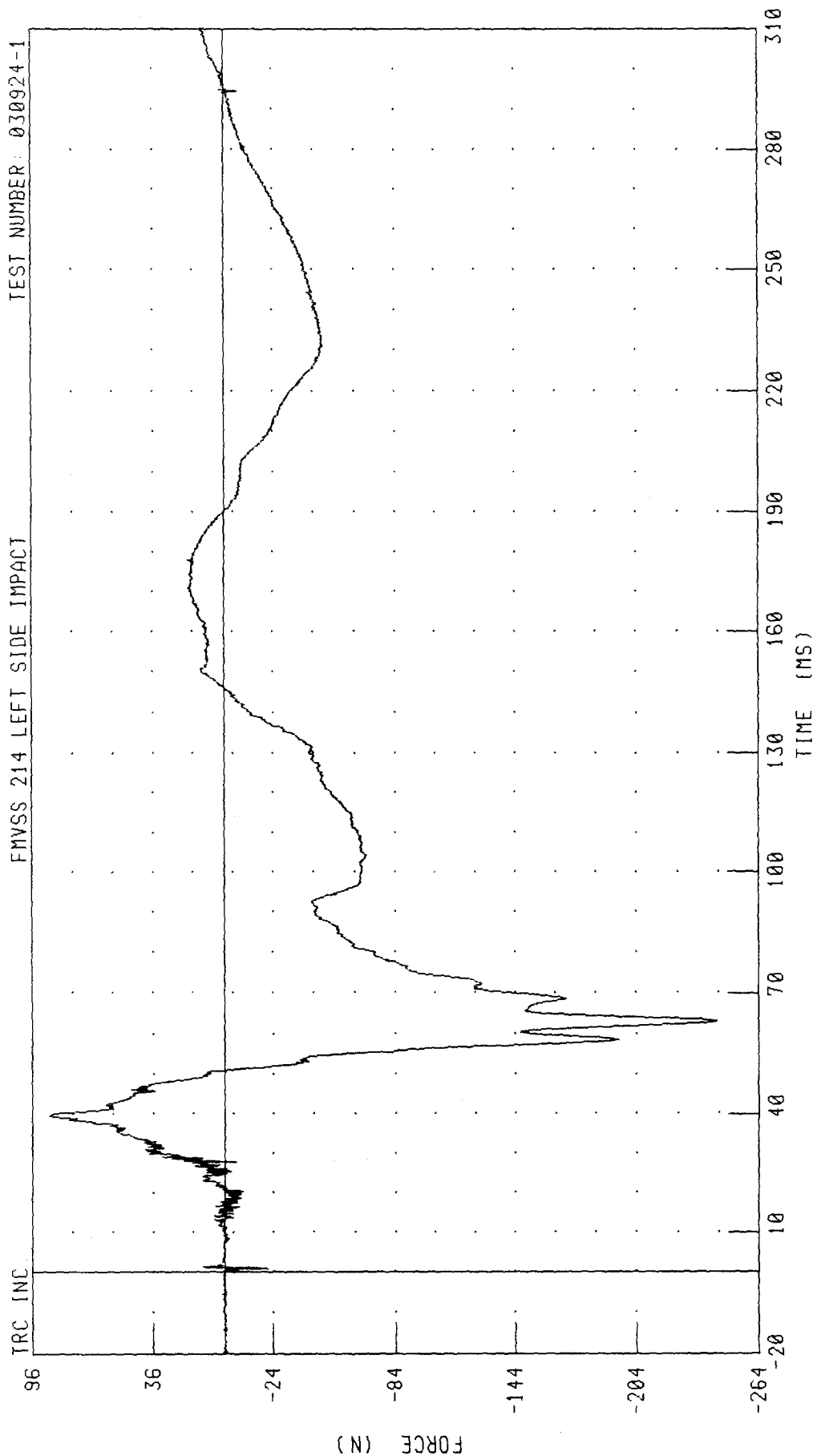
PEAK DATA: 33.61 G @ 57.44 MS, 0.01 G @ -18.80 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

DRIVER NECK X-AXIS SHEAR FORCE

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030924-1



CHANNEL: NEKXF1 FILTER: CH CLASS 1000

PEAK DATA: 87.32 N @ 39.68 MS, -243.16 N @ 63.20 MS

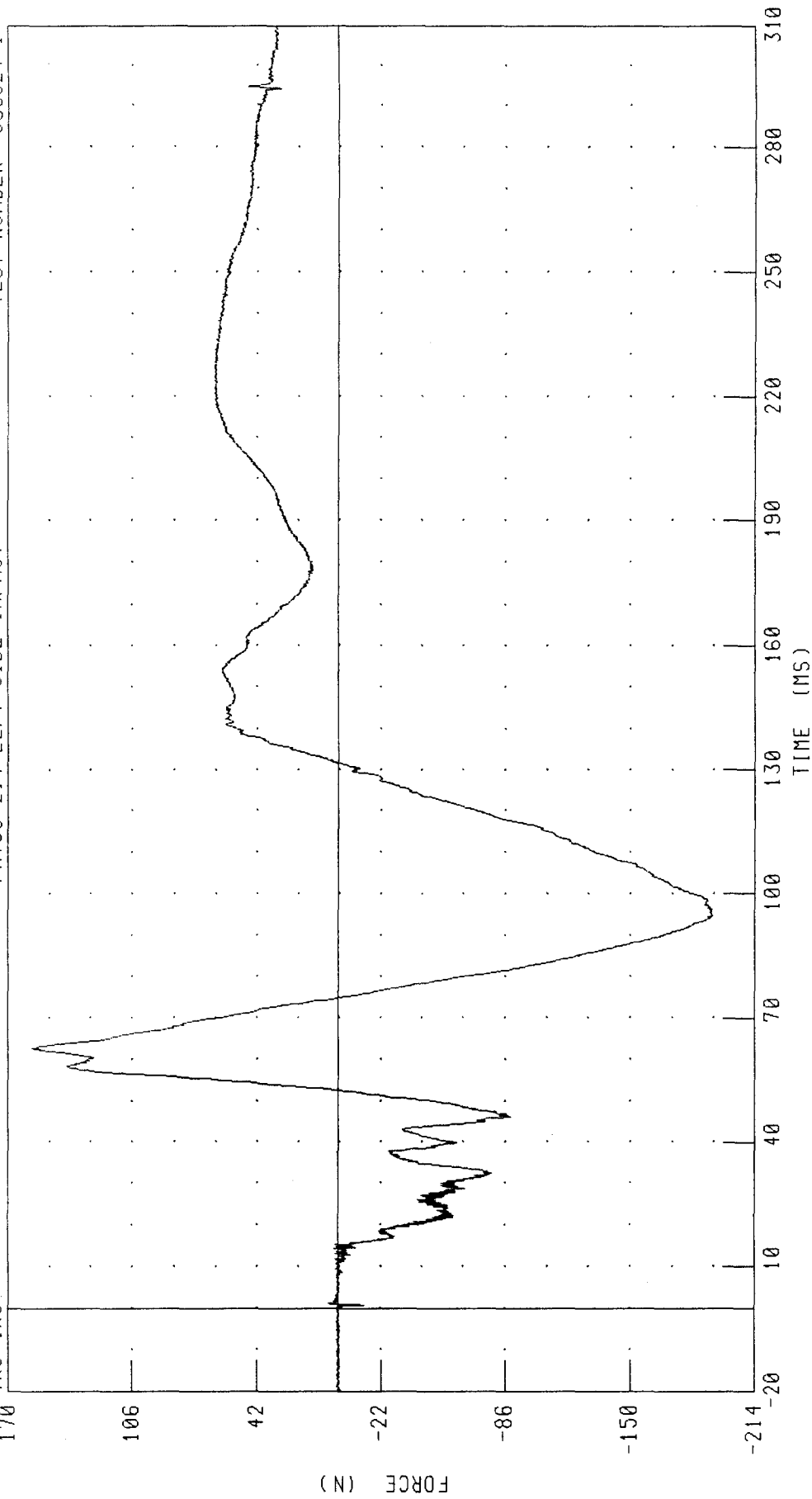
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

DRIVER NECK Y-AXIS SHEAR FORCE

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030924-1

TRC INC.



CHANNEL: NEKYF1 FILTER: CH. CLASS 1000

PEAK DATA 157 79 N @ 62 64 MS, -192 54 N @ 94 72 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
DRIVER NECK Z-AXIS AXIAL FORCE
FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030924-1

TRC INC.

104

85

66

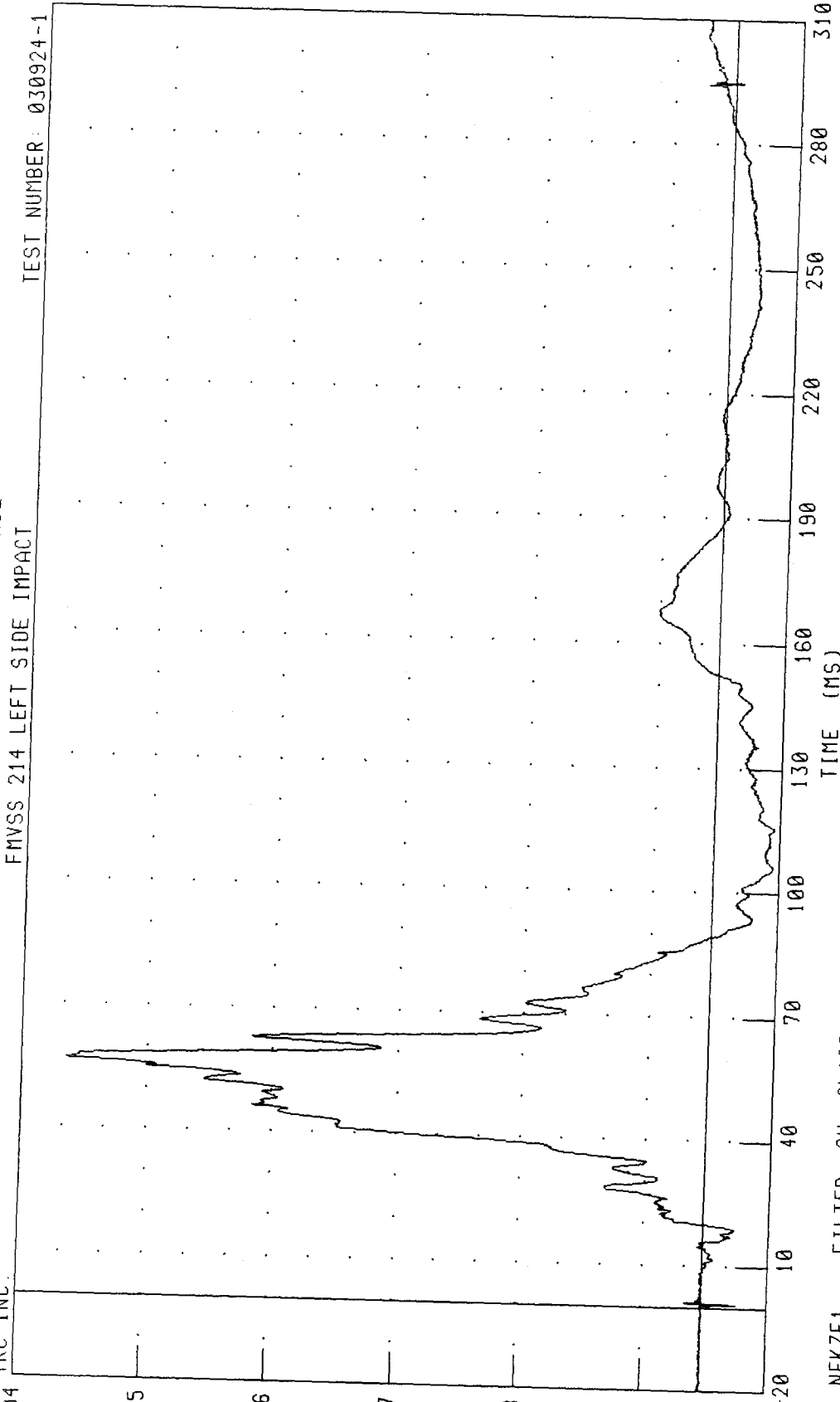
47

28

9

-10

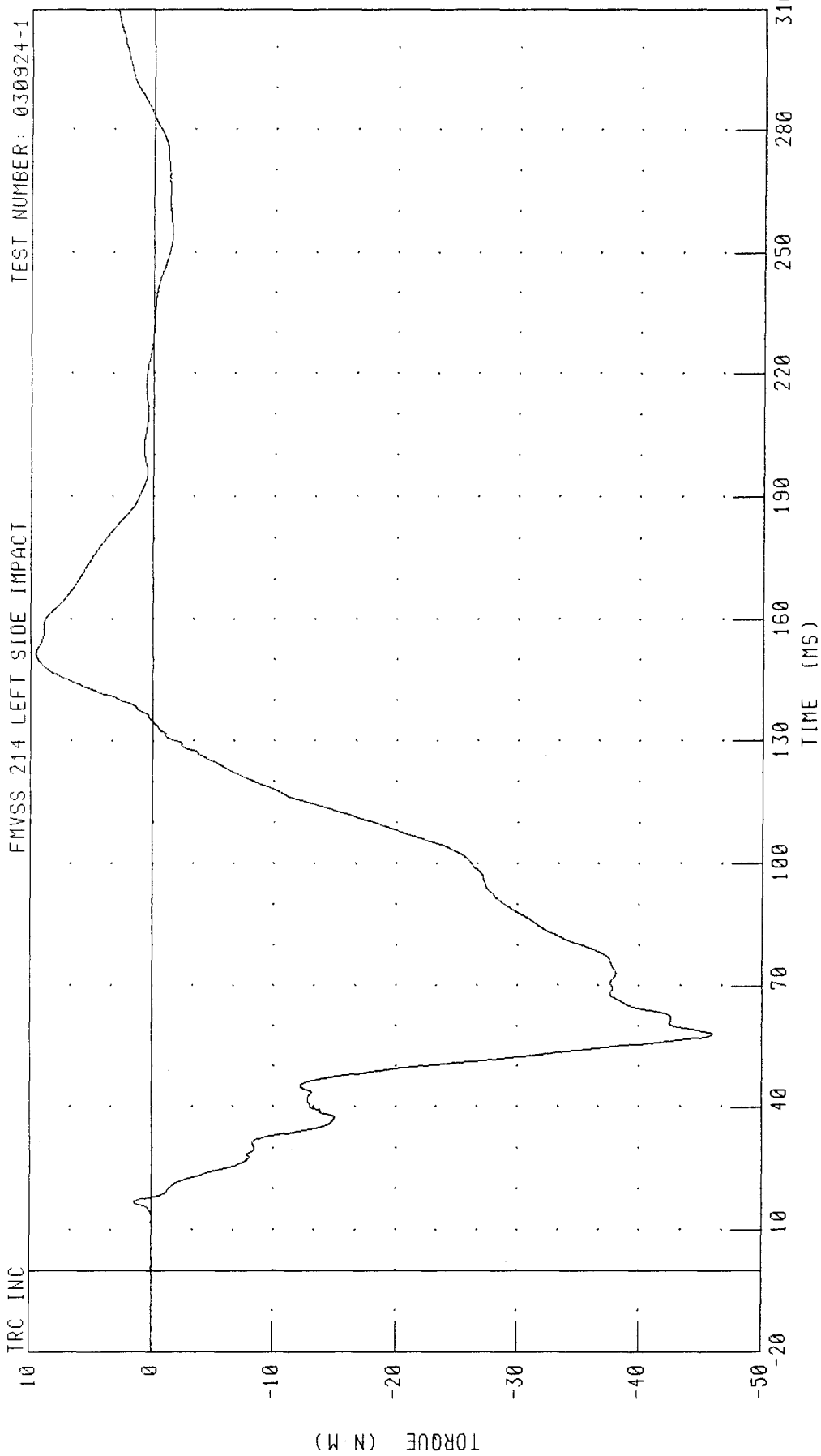
FORCE (N X 10³)



CHANNEL: NEKZF1 FILTER: CH CLASS 1000

PEAK DATA: 973.46 N @ 57.20 MS, -91.71 N @ 115.36 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
DRIVER NECK MOMENT ABOUT X AXIS



CHANNEL: NEKXM1 FILTER: CH CLASS 600 PEAK DATA: 9.57 N M @ 151.60 MS, -45.94 N M @ 57.92 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

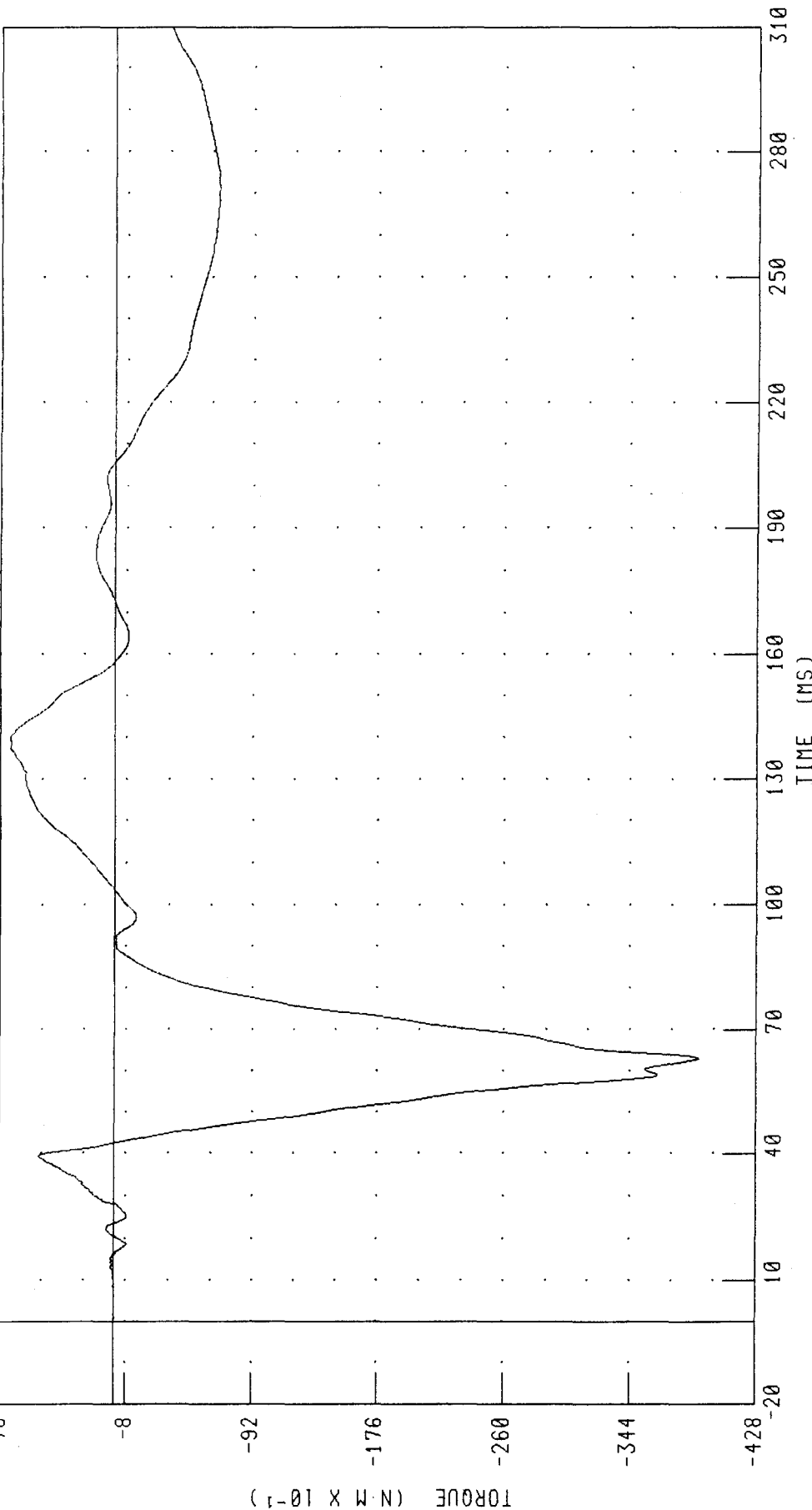
DRIVER NECK MOMENT ABOUT Y AXIS

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

TRC INC.

76



CHANNEL: NEKYM1 FILTER: CH. CLASS 600

PEAK DATA: 6 92 N·m @ 139.60 MS, -39.00 N·m @ 63.12 MS

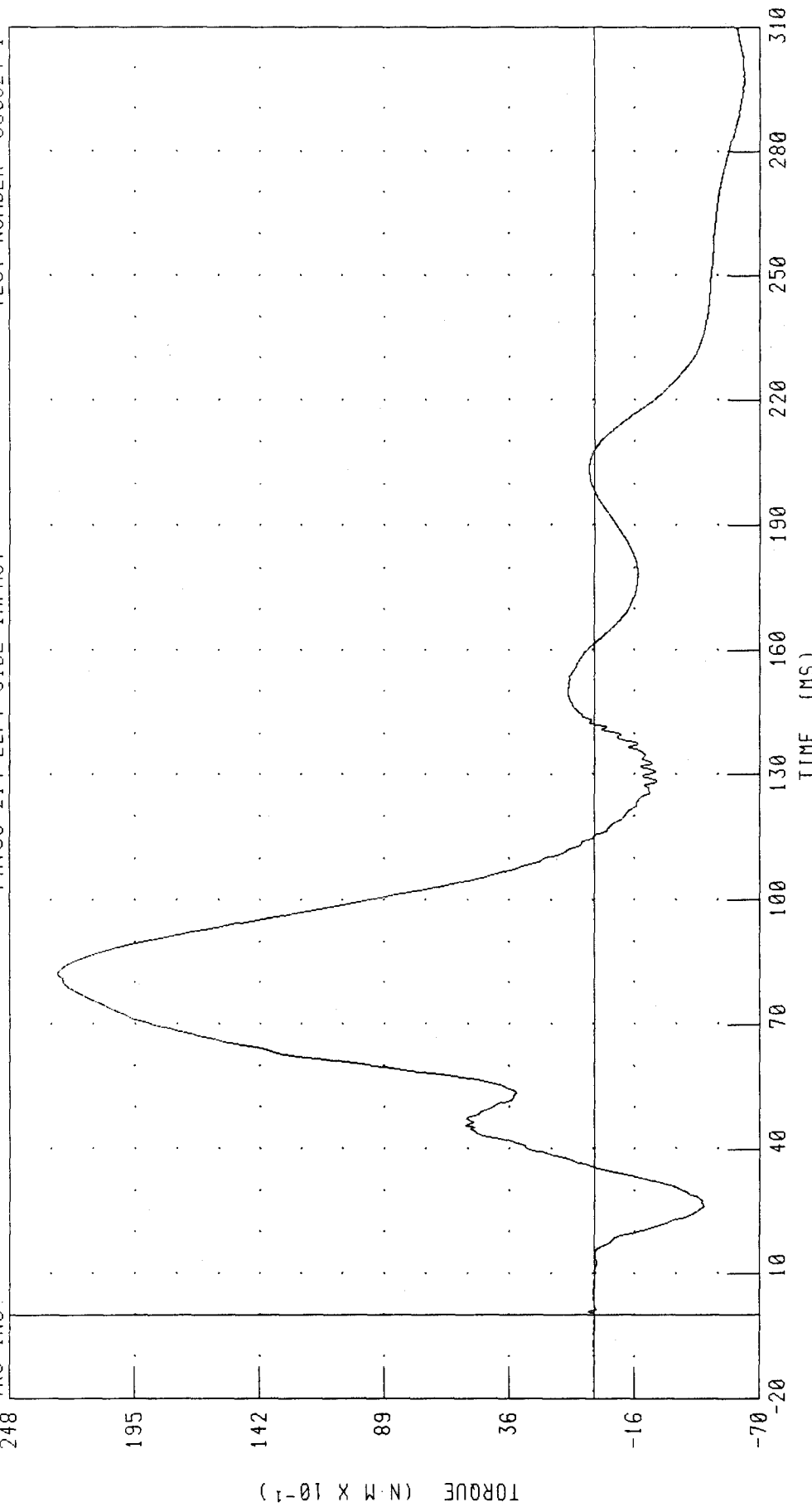
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

DRIVER NECK MOMENT ABOUT Z AXIS

TEST NUMBER: 030924-1

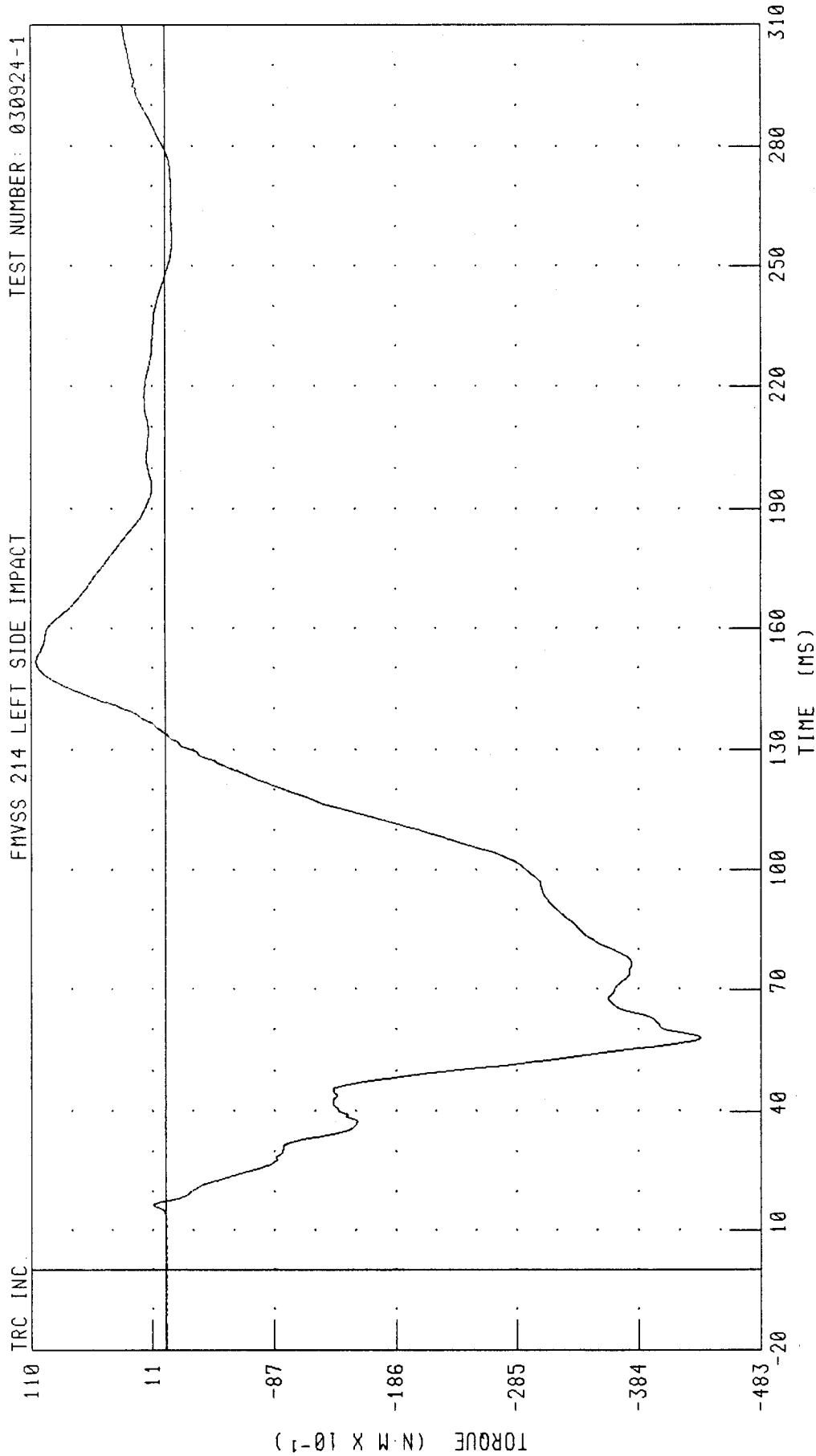
FMVSS 214 LEFT SIDE IMPACT

TRC INC.



CHANNEL: NEKZM1 FILTER: CH. CLASS 600 PEAK DATA: 22.74 N M @ 82.24 MS, -6.38 N M @ 297.28 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
 DRIVER NECK OCCIPITAL CONDYLE MOMENT ABOUT X AXIS



CHANNEL: NK0XM1 FILTER: CH. CLASS 600

PEAK DATA: 10.59 N·M @ 151.68 MS, -43.51 N·M @ 57.84 MS

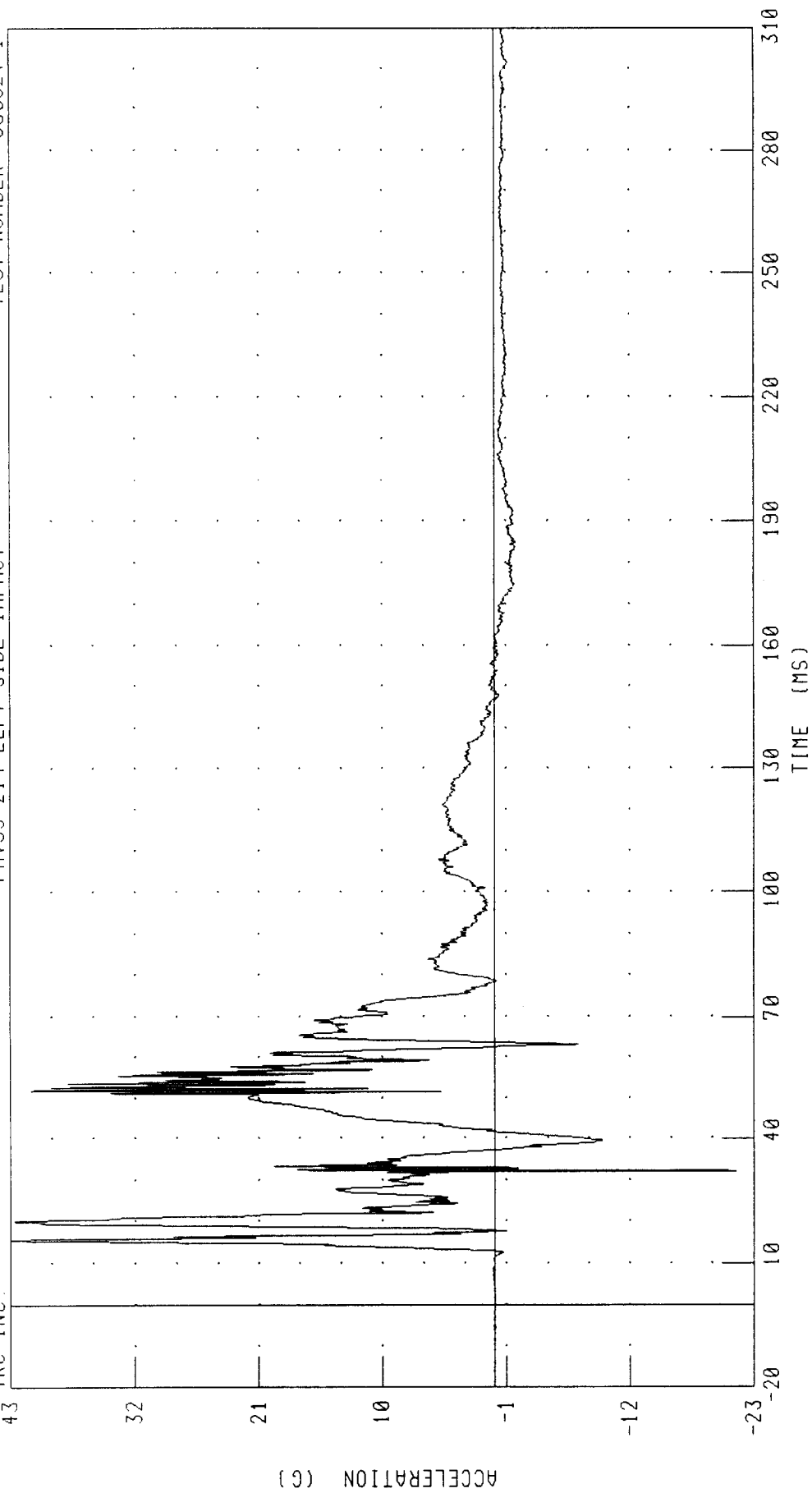
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

DRIVER UPPER RIB Y-AXIS ACCELERATION

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

TRC INC.



CHANNEL: LURYC1 FILTER: CH. CLASS 1000

PEAK DATA: 42.88 G @ 15.52 MS, -21.42 G @ 32.08 MS

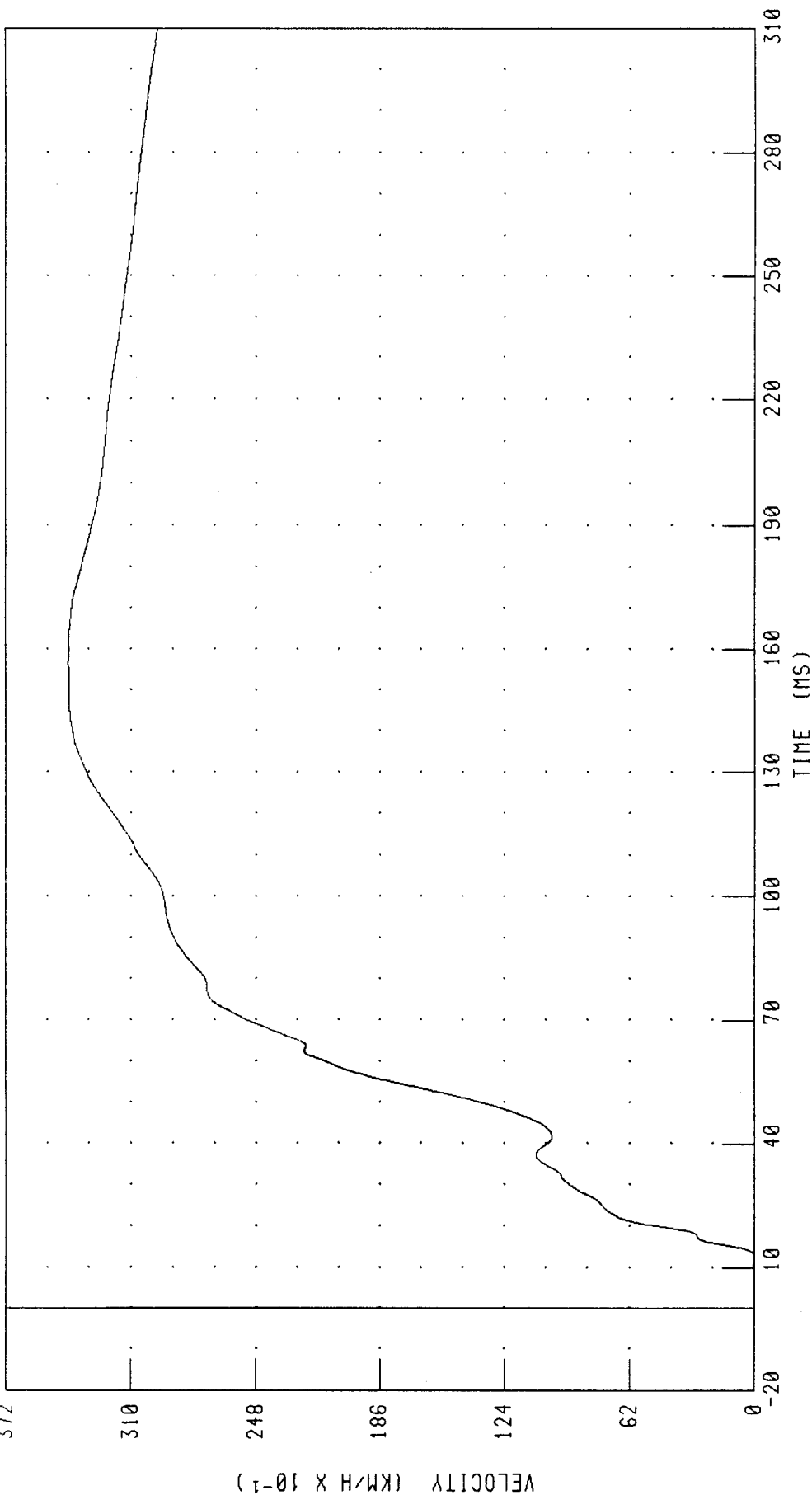
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

DRIVER UPPER RIB Y-AXIS VELOCITY

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

TRC INC.



CHANNEL: LURYV1 FILTER: CH CLASS 180

PEAK DATA: 34 09 KM/H @ 156 48 MS, 0 00 KM/H @ 0 00 MS

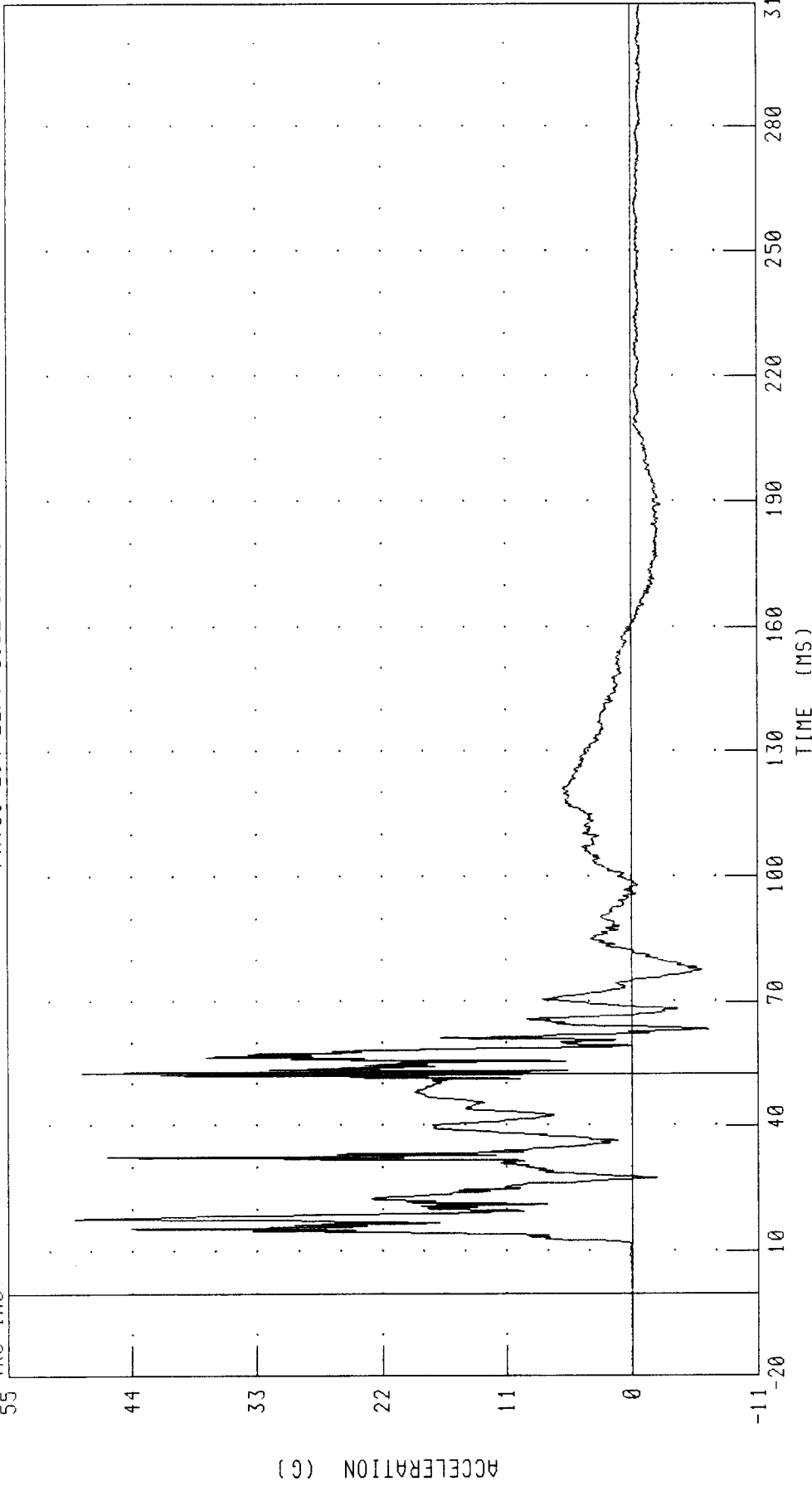
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

DRIVER LOWER RIB Y-AXIS ACCELERATION

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

TRC INC



CHANNEL: LLRYG1 FILTER: CH. CLASS 1000

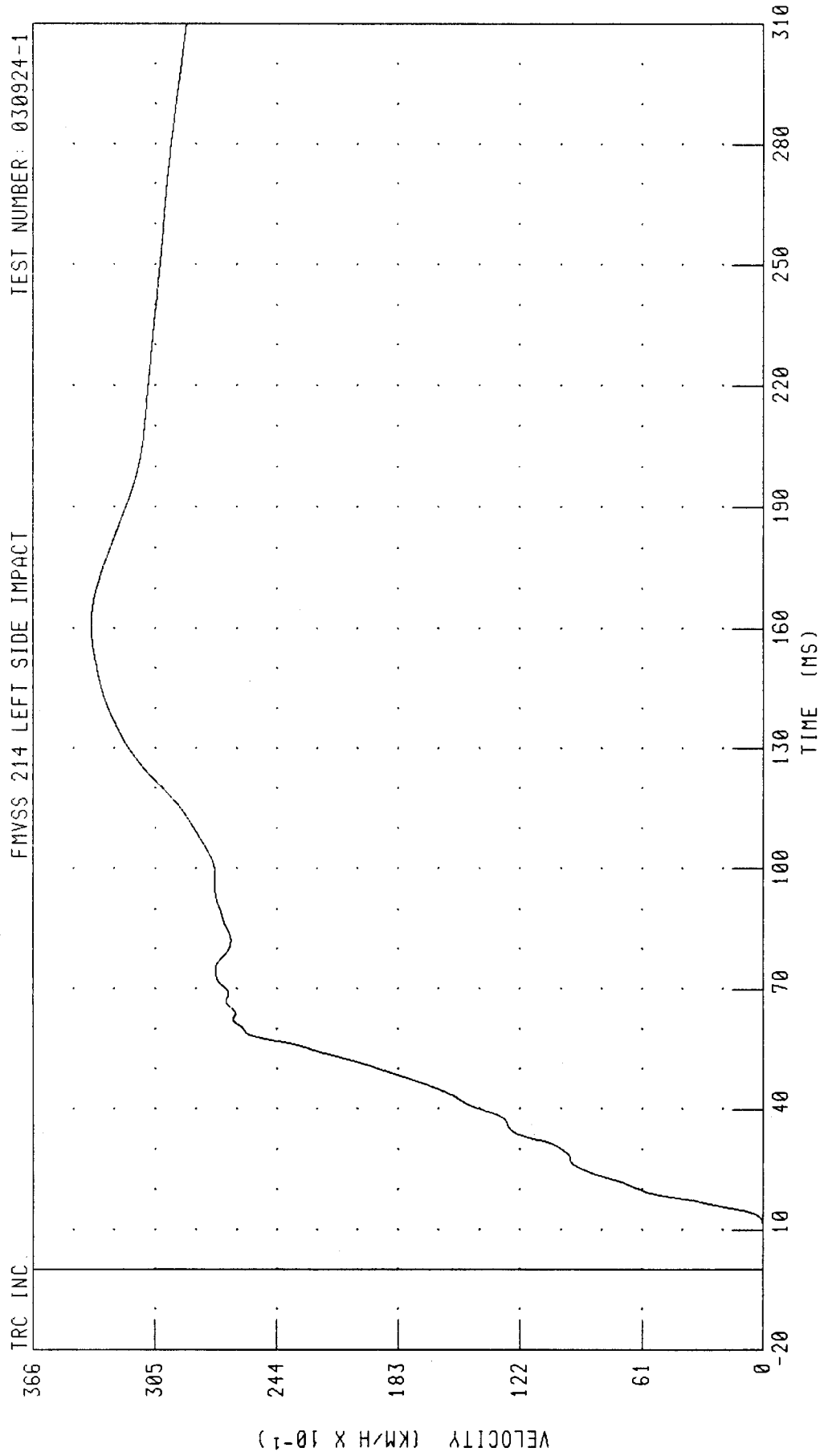
PEAK DATA: 49 15 G @ 17.92 MS, -10.91 G @ 52.32 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

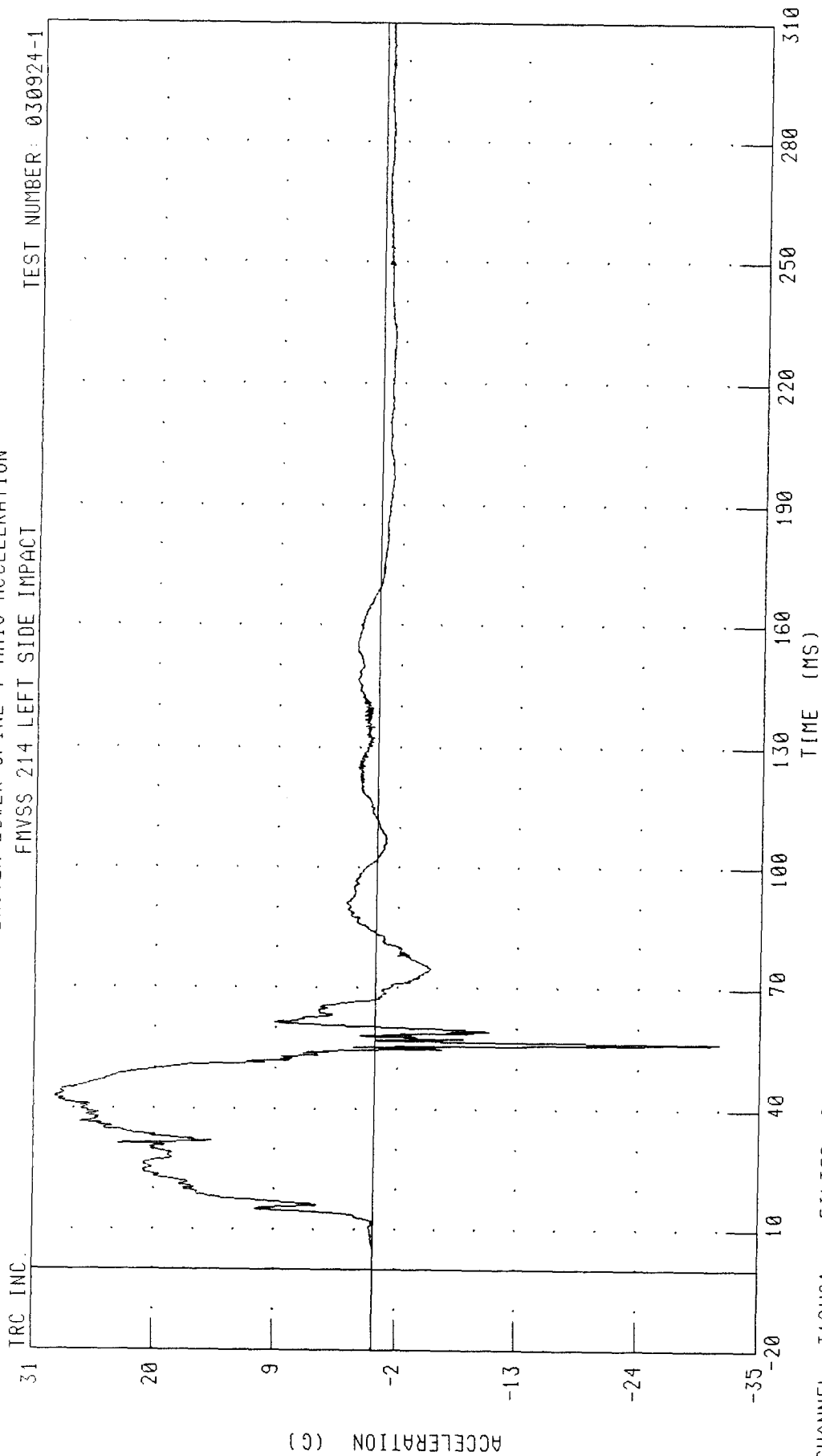
DRIVER LOWER RIB Y-AXIS VELOCITY

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030924-1



55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
DRIVER LOWER SPINE Y-AXIS ACCELERATION



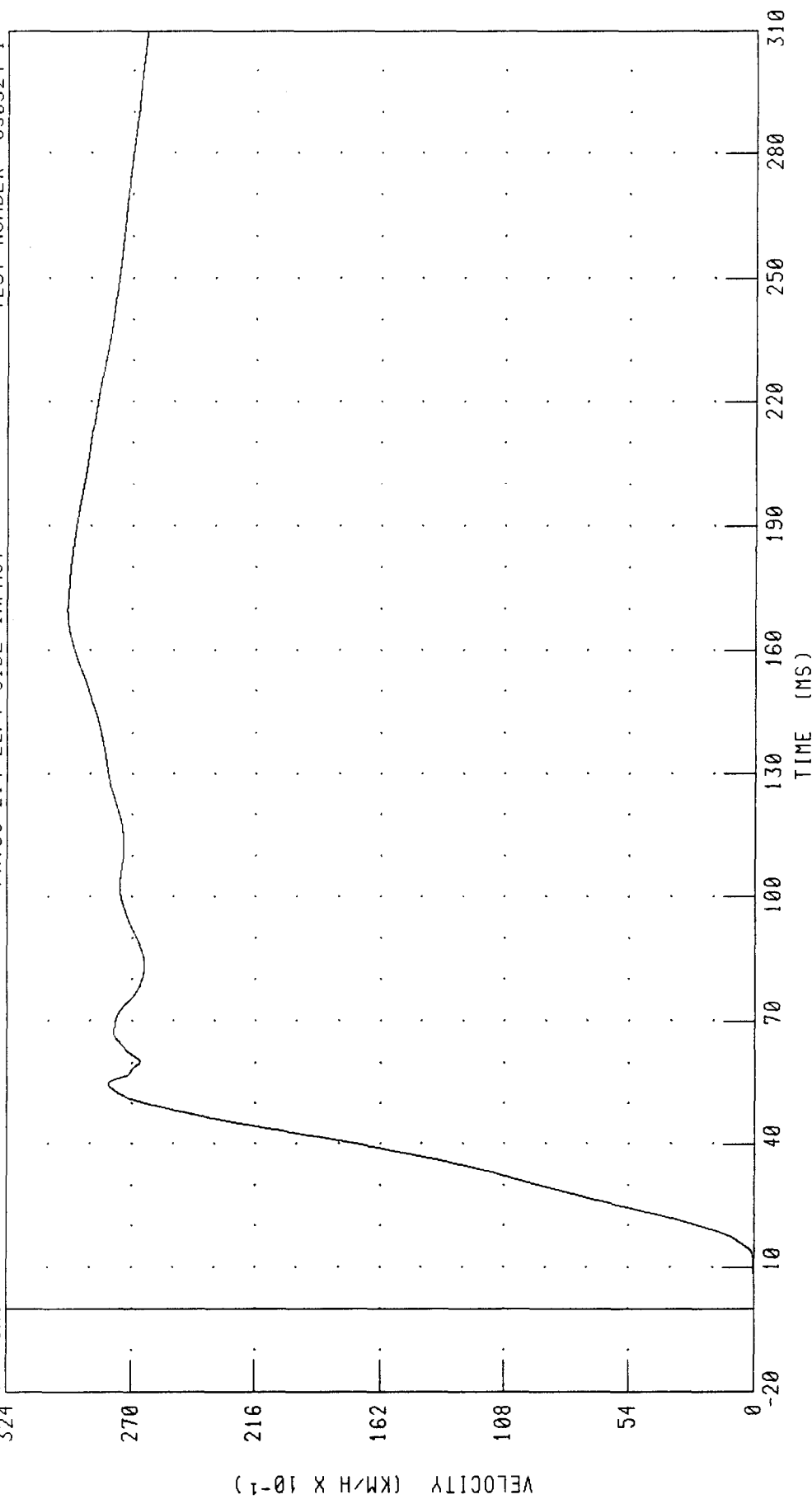
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

DRIVER LOWER SPINE Y-AXIS VELOCITY

TRC INC.

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030924-1



CHANNEL: T12YV1 FILTER: CH. CLASS 180

PEAK DATA: 29 78 KM/H @ 169 68 MS, 0 00 KM/H @ 0 00 MS

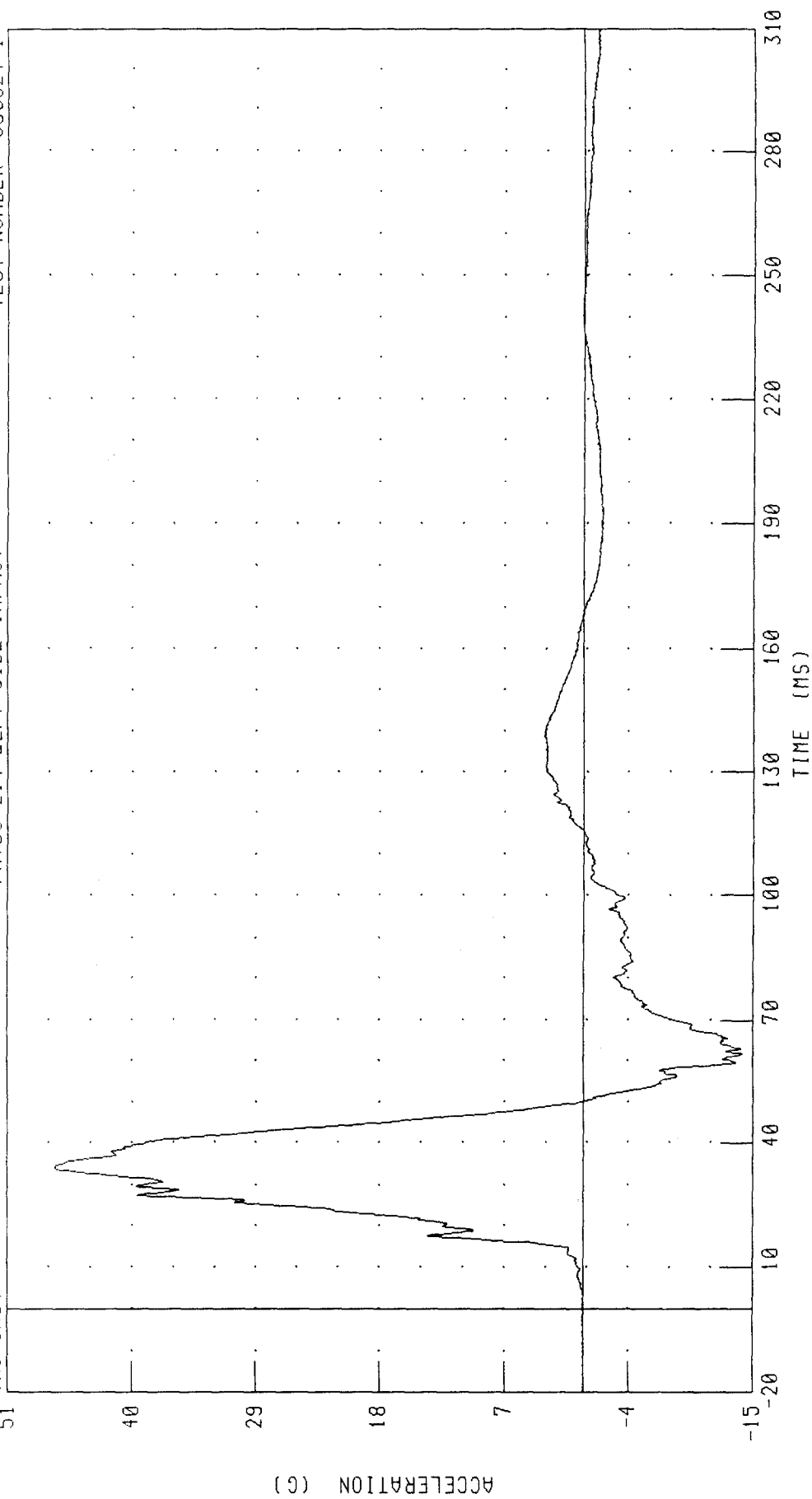
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

DRIVER PELVIS Y-AXIS ACCELERATION

51 TRC INC.

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030924-1



CHANNEL: PEVYC1 FILTER: CH CLASS 1000

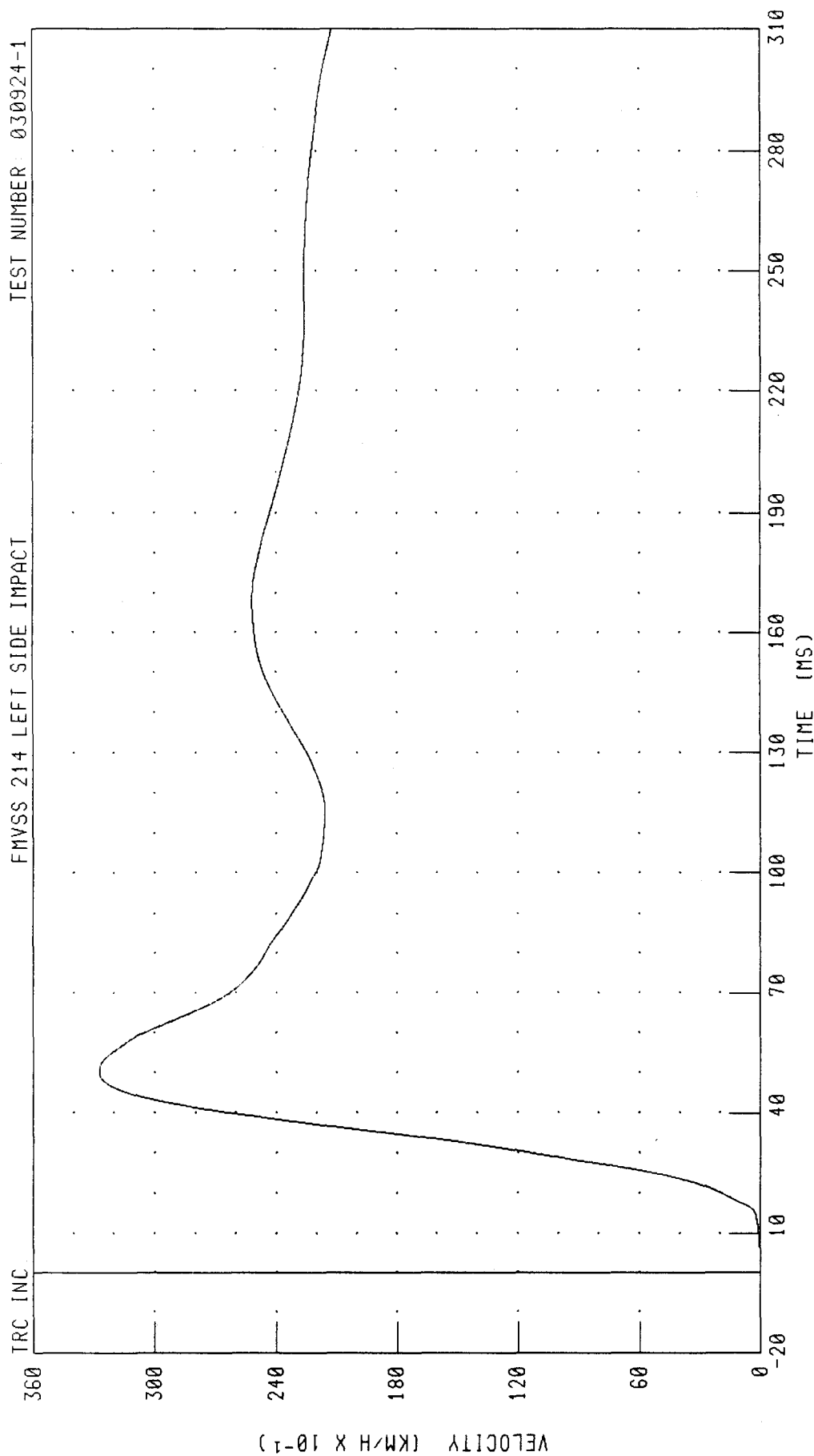
PEAK DATA: 46.75 G @ 34.56 MS, -14.12 G @ 61.84 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

DRIVER PELVIS Y-AXIS VELOCITY

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER 030924-1



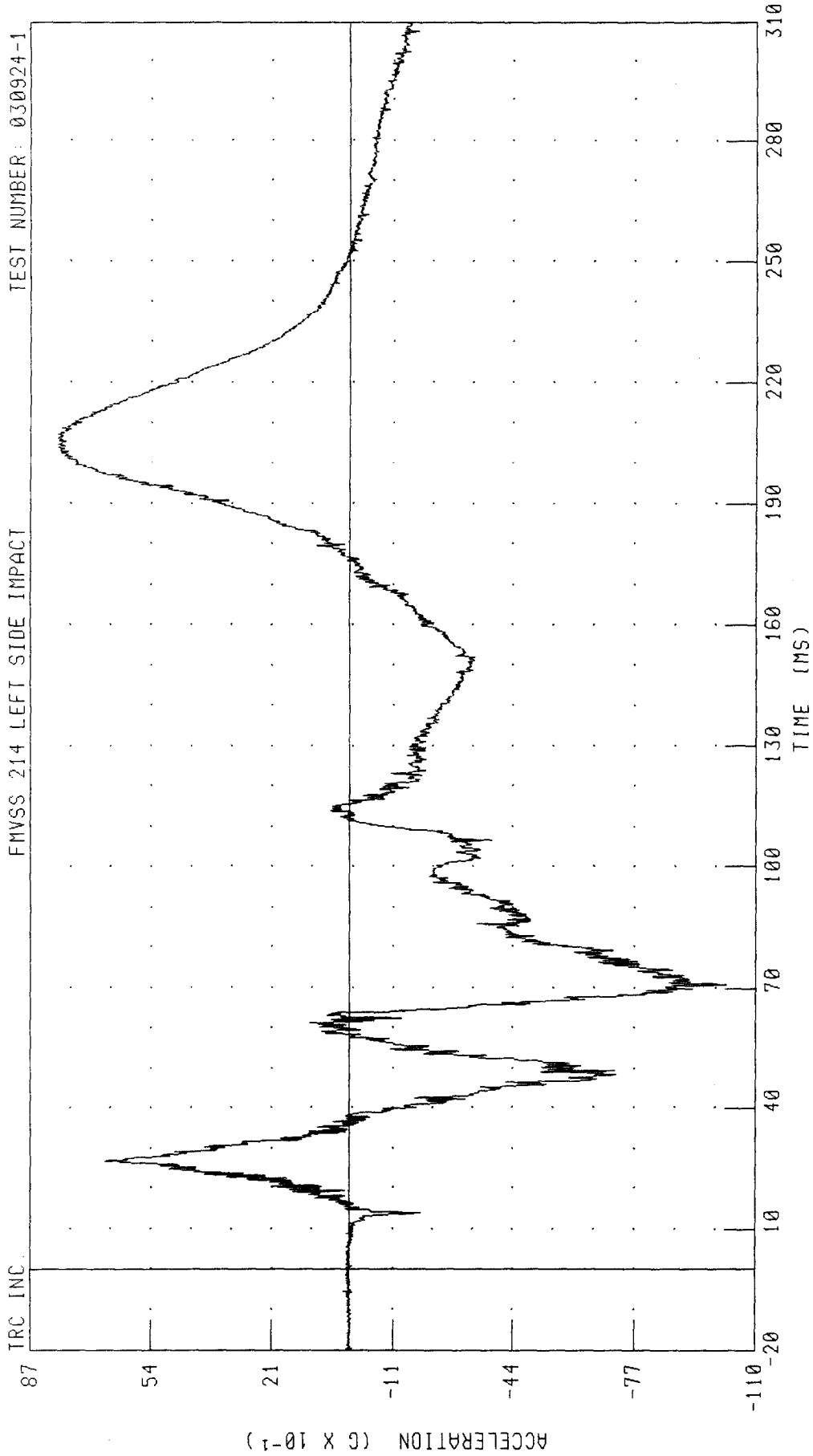
CHANNEL: PEVYV1 FILTER: CH. CLASS 180

PEAK DATA: 32 73 KM/H @ 50 24 MS; 0 00 KM/H @ 0 00 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
LEFT REAR PASSENGER HEAD X-AXIS ACCELERATION

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030924-1



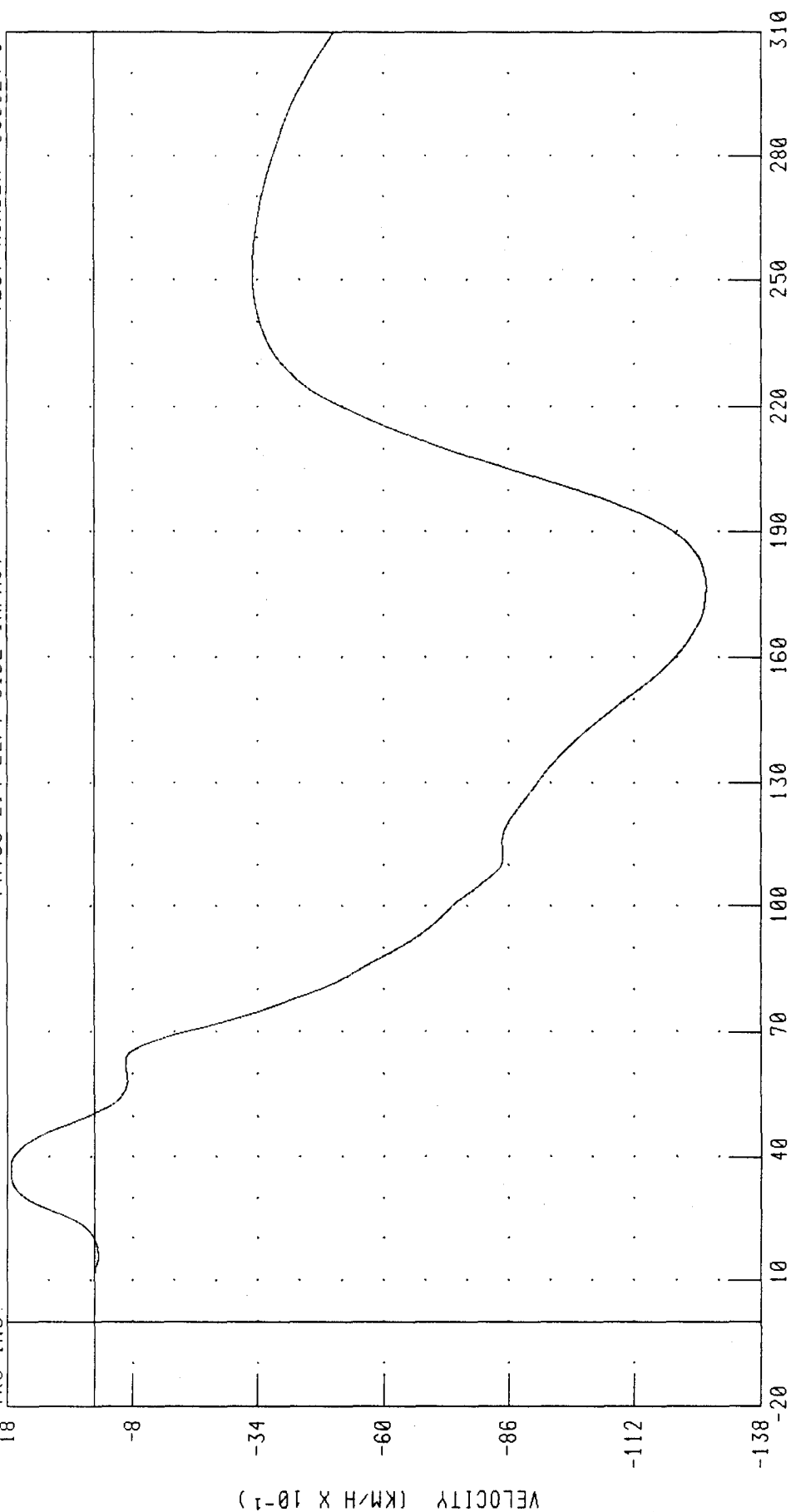
CHANNEL: HEDXC4 FILTER: CH CLASS 1000 PEAK DATA: 7 95 G @ 203.92 MS; -10 28 G @ 70.88 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
LEFT REAR PASSENGER HEAD X-AXIS VELOCITY

TEST NUMBER 030924-1

FMVSS 214 LEFT SIDE IMPACT

TRC INC.



TIME (MS)

PEAK DATA: 1.73 KM/H @ 36.56 MS, -12.67 KM/H @ 176.72 MS

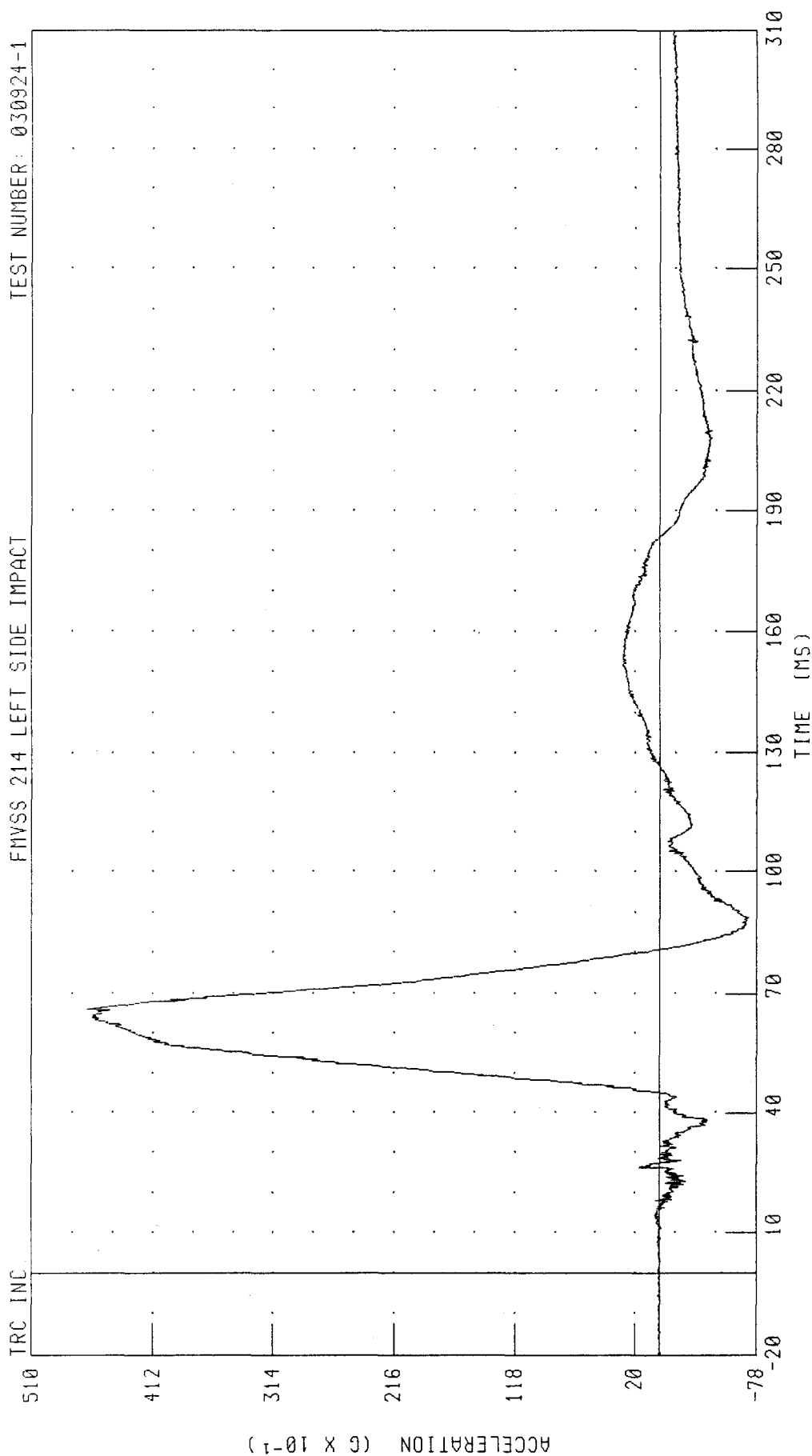
CHANNEL: HEDXV4 FILTER: CH CLASS 180

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

LEFT REAR PASSENGER HEAD Y-AXIS ACCELERATION

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030924-1



CHANNEL: HEDYG4 FILTER: CH. CLASS 1000

PEAK DATA: 46.52 G @ 66.08 MS, -7.13 G @ 88.56 MS

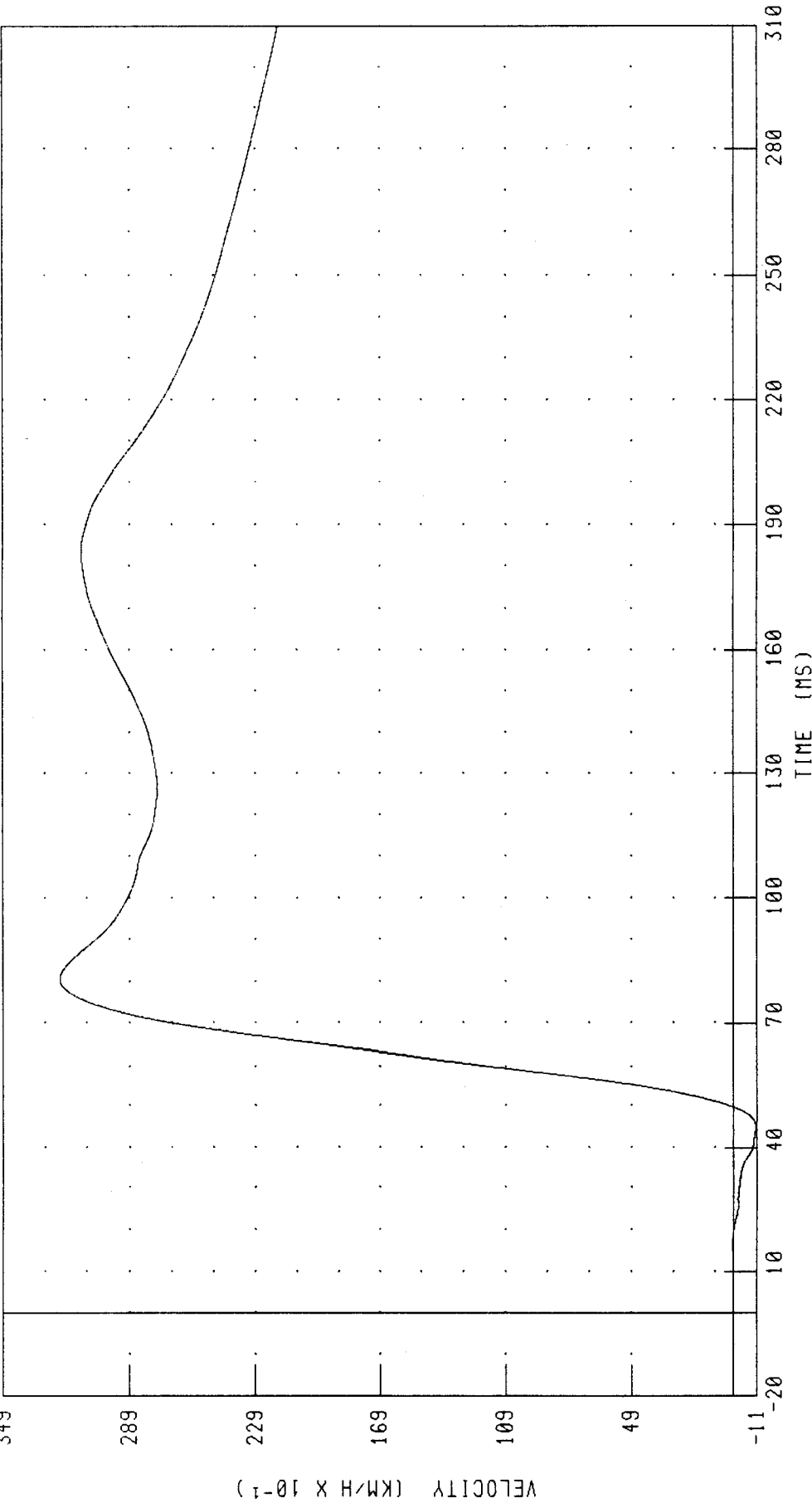
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

LEFT REAR PASSENGER HEAD Y-AXIS VELOCITY

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

TRC INC.

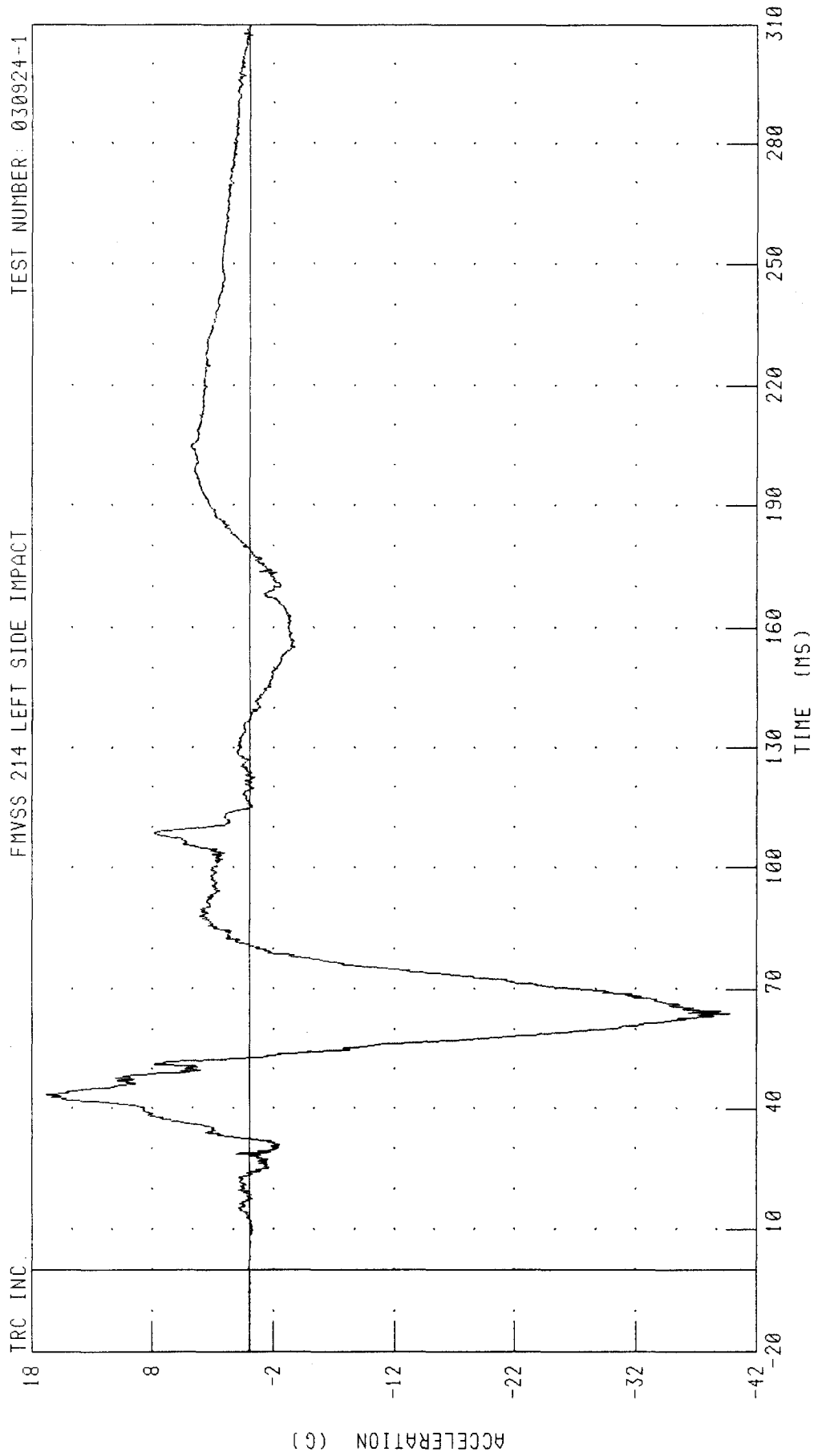


CHANNEL: HEDYV4 FILTER: CH. CLASS 180

PEAK DATA: 32 19 KM/H @ 80 64 MS; -1 05 KM/H @ 45 04 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

LEFT REAR PASSENGER HEAD Z-AXIS ACCELERATION



CHANNEL: HEDZG4 FILTER: CH. CLASS 1000

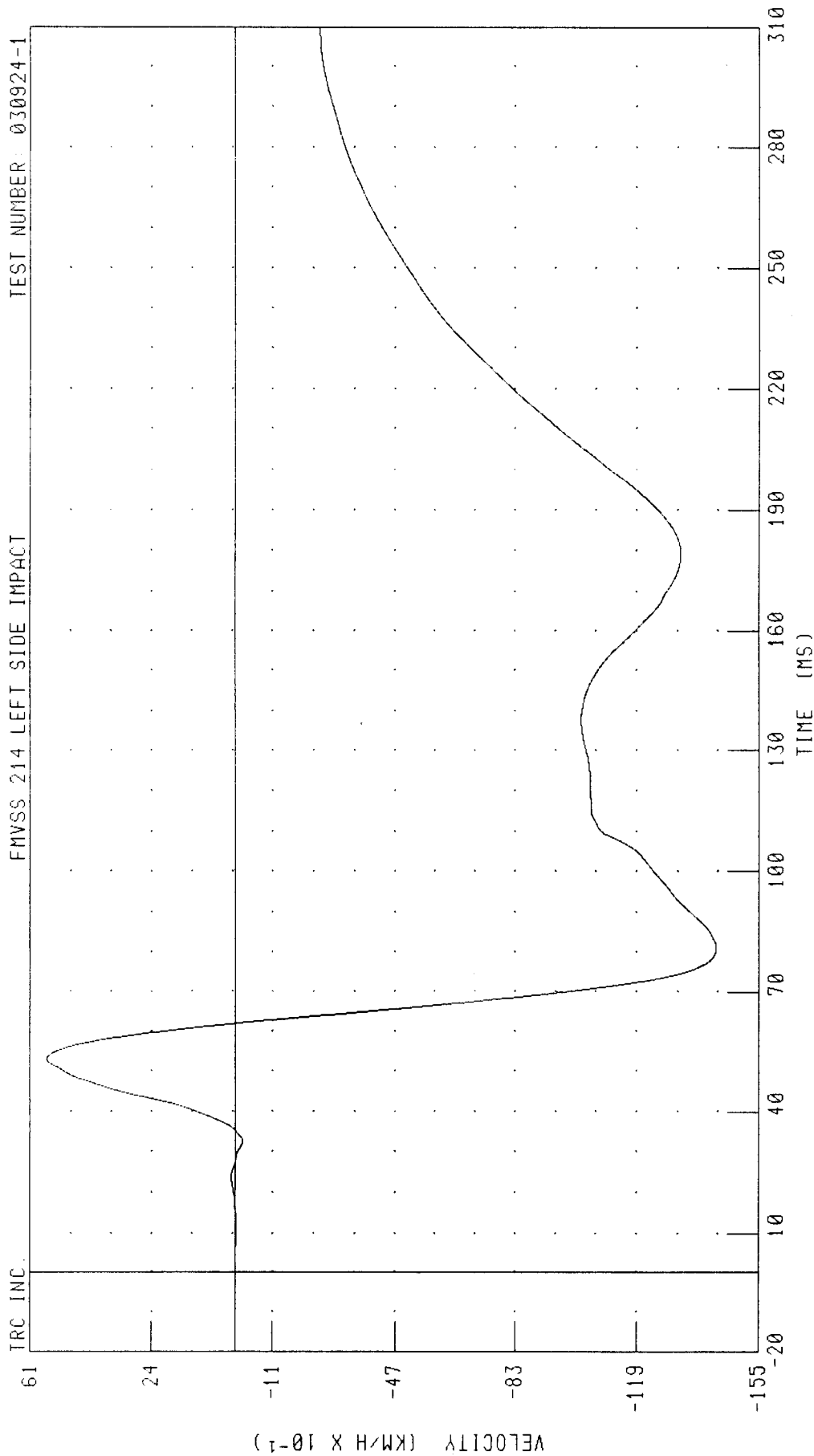
PEAK DATA: 16.84 G @ 43.60 MS, -39.77 G @ 64.08 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

LEFT REAR PASSENGER HEAD Z-AXIS VELOCITY

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT



CHANNEL: HEADZV4 FILTER: CH CLASS 180

PEAK DATA 5.60 KM/H @ 52.96 MS, -14.26 KM/H @ 81.04 MS

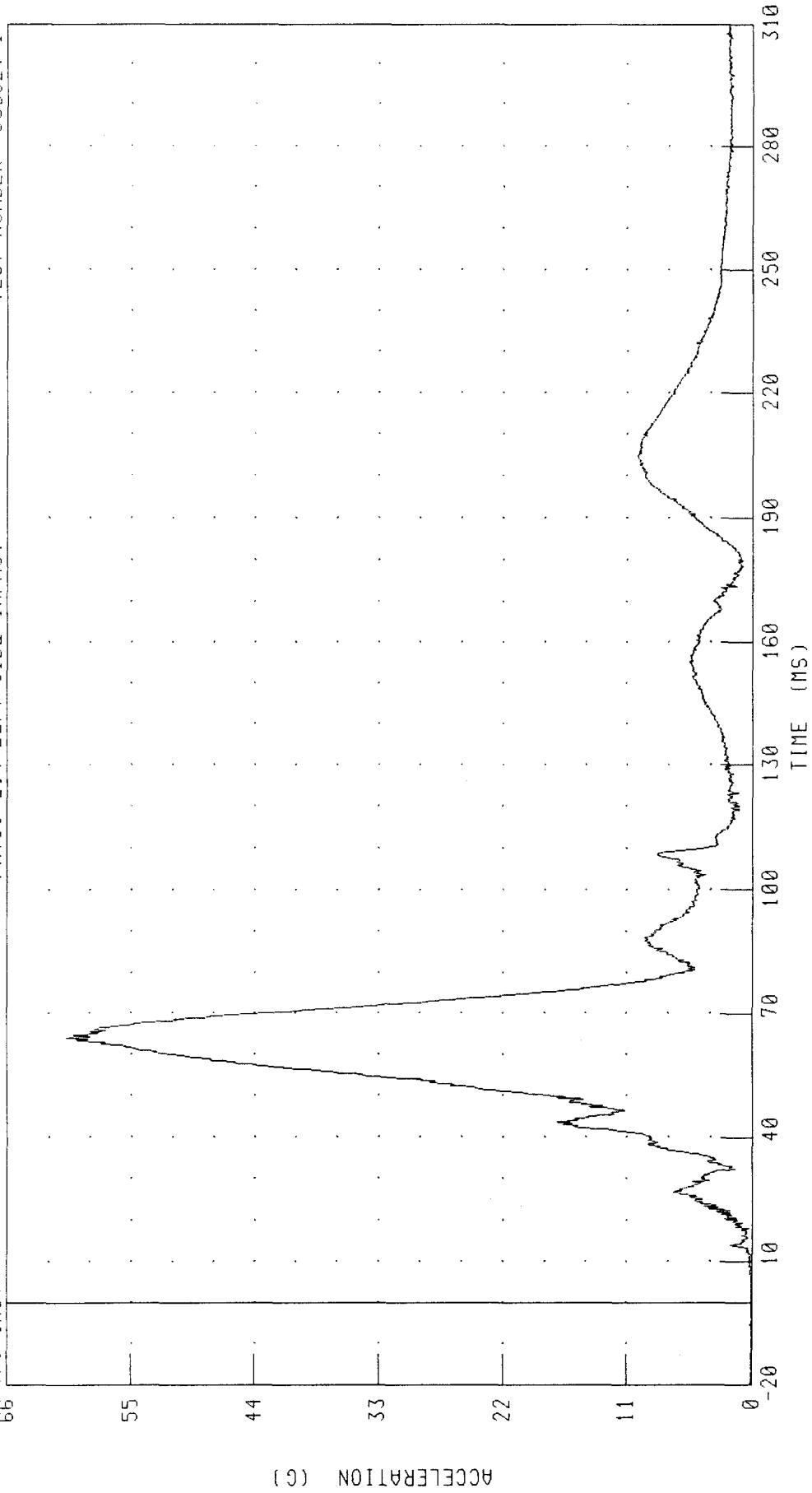
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

LEFT REAR PASSENGER HEAD RESULTANT ACCELERATION

TRC INC

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030924-1



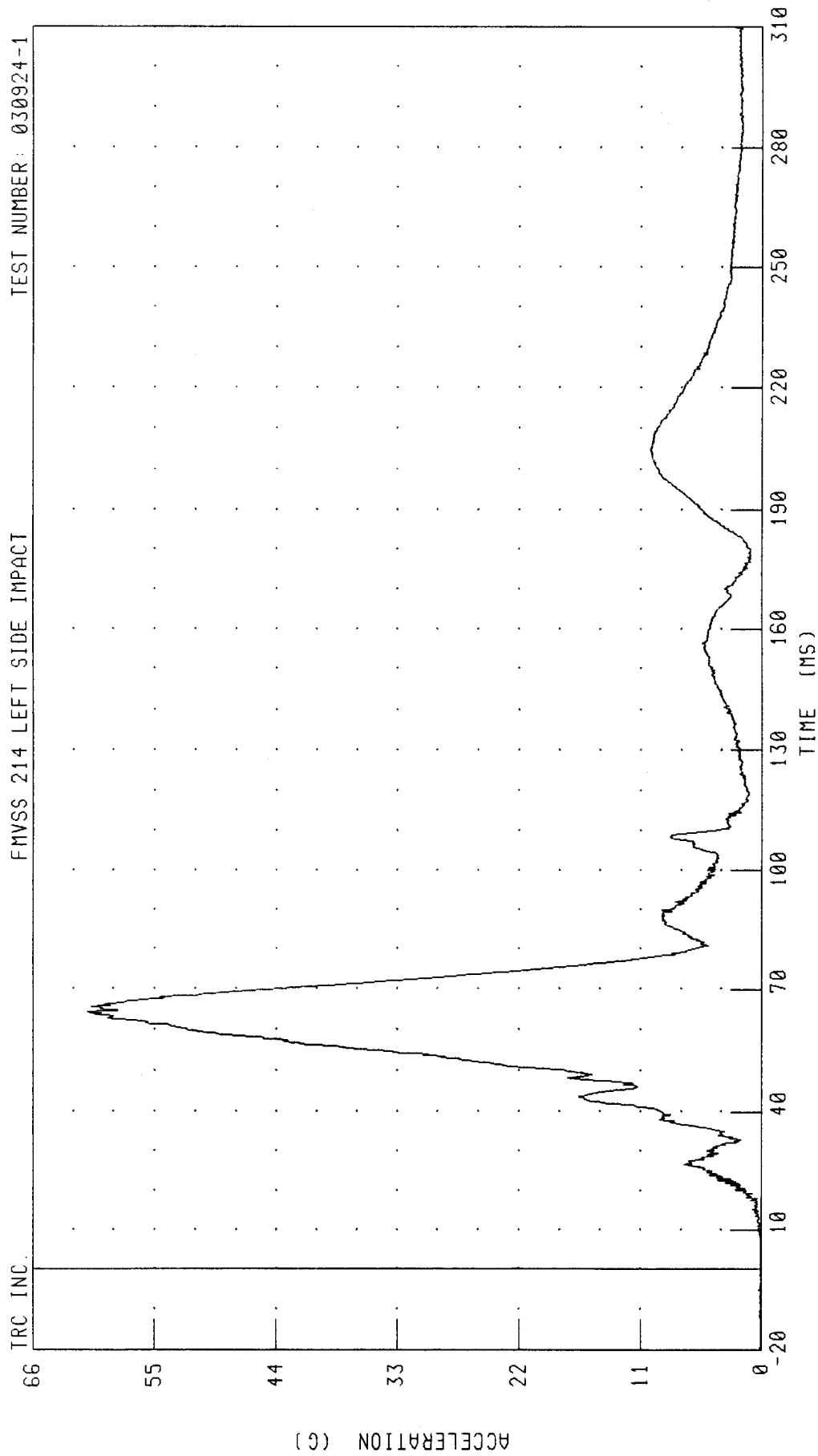
CHANNEL: HEDC4 FILTER: CH CLASS 1000

PEAK DATA: 60.82 G @ 64.00 MS, 0.02 G @ -18.96 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
LEFT REAR PASSENGER HEAD RESULTANT REDUNDANT ACCELERATION

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

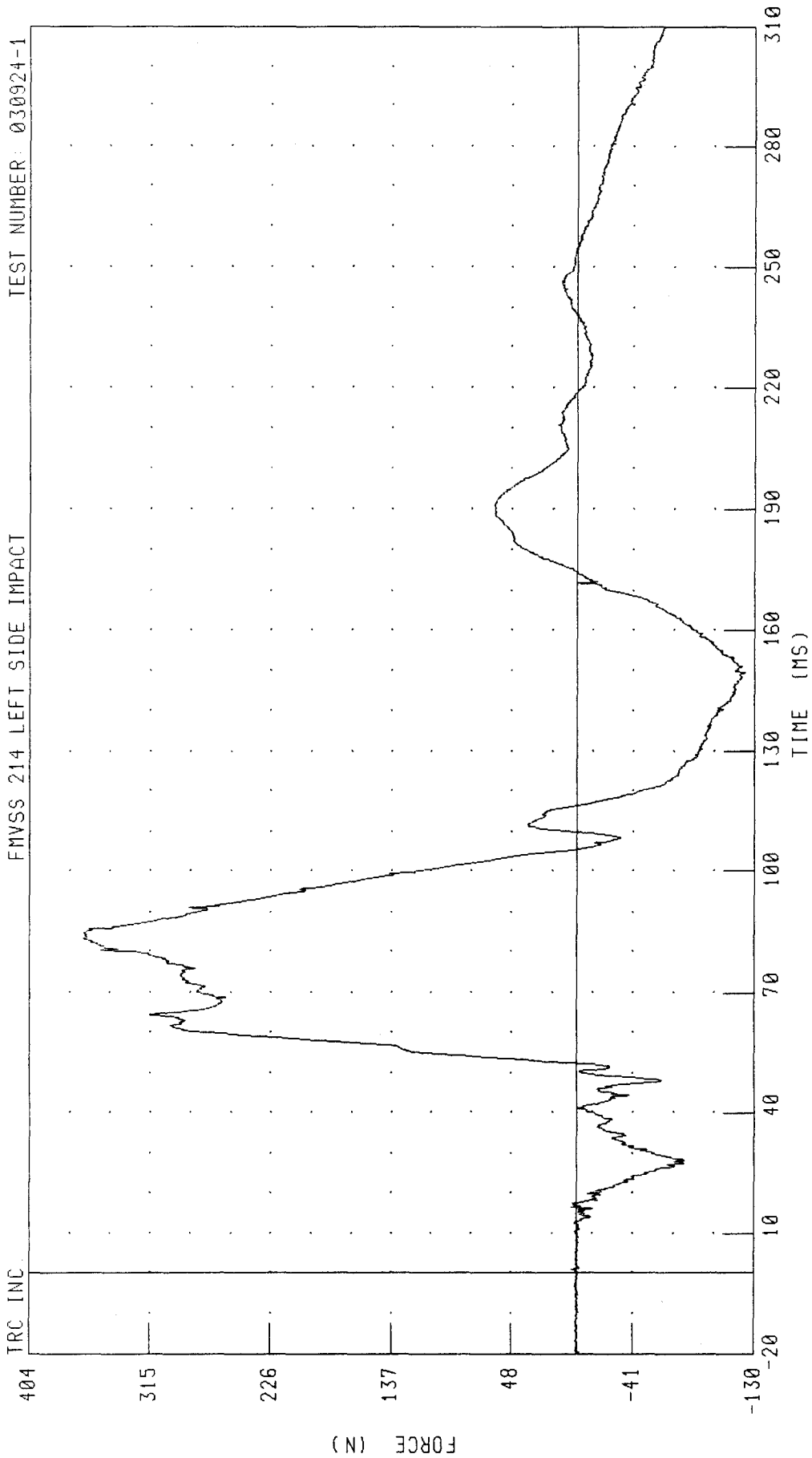


CHANNEL: HEDRR4 FILTER: CH. CLASS 1000

PEAK DATA: 61.10 G @ 64.32 MS, 0.01 G @ -18.80 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

LEFT REAR PASSENGER NECK X-AXIS SHEAR FORCE

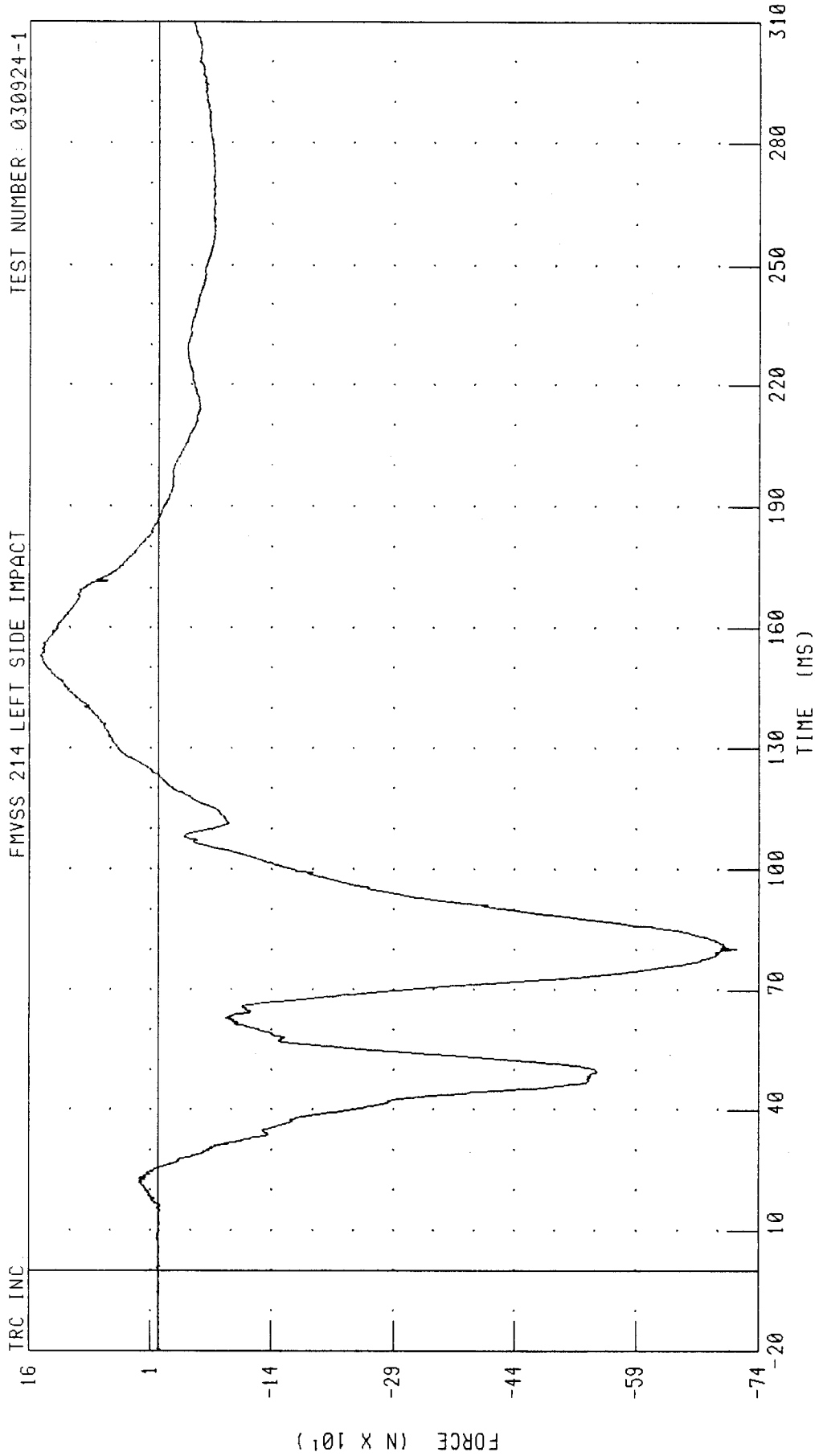


CHANNEL: NEKXF4 FILTER: CH CLASS 1000

PEAK DATA: 364.30 N @ 83.28 MS, -123.06 N @ 149.52 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
LEFT REAR PASSENGER NECK Y-AXIS SHEAR FORCE

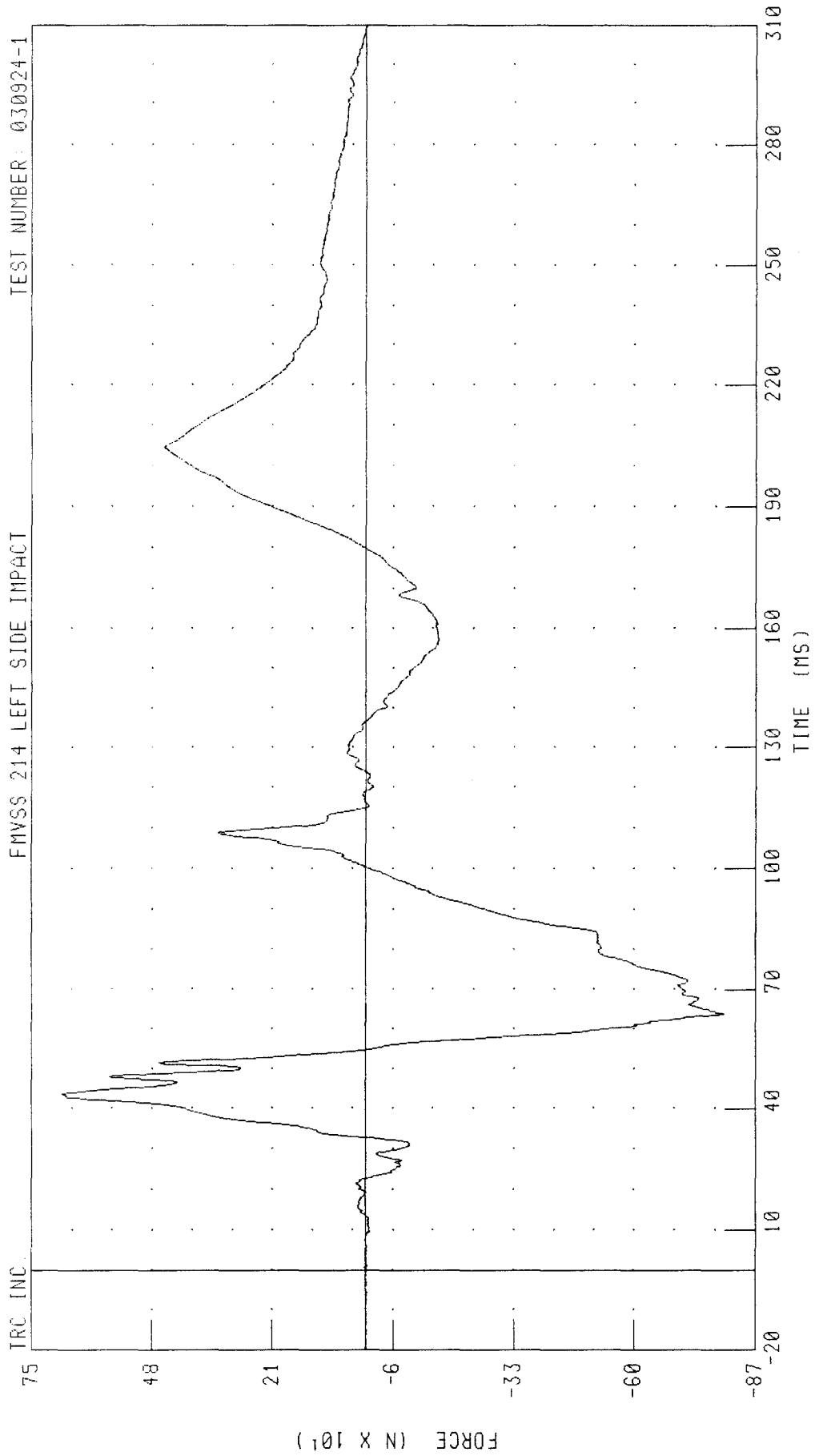
FMVSS 214 LEFT SIDE IMPACT TEST NUMBER: 030924-1



CHANNEL: NEKYF4 FILTER: CH. CLASS 1000

PEAK DATA: 145.86 N @ 153.28 MS, -713.74 N @ 80.32 MS

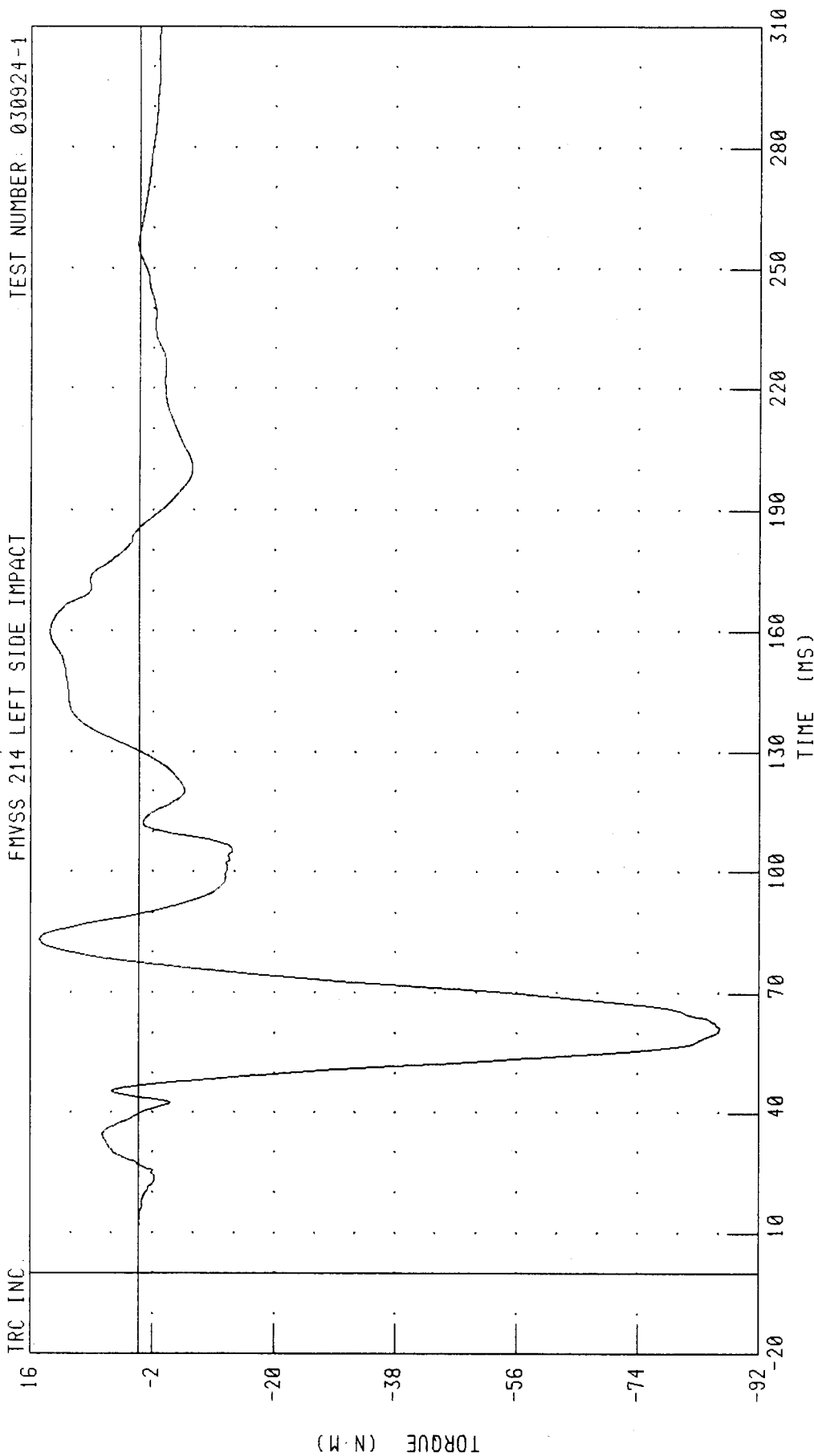
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
LEFT REAR PASSENGER NECK Z-AXIS AXIAL FORCE



CHANNEL: NEKZF4 FILTER: CH. CLASS 1000

PEAK DATA: 682 37 N @ 43 68 MS, -798 45 N @ 63 84 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
LEFT REAR PASSENGER NECK MOMENT ABOUT X AXIS



CHANNEL: NEKXM4 FILTER: CH. CLASS 600

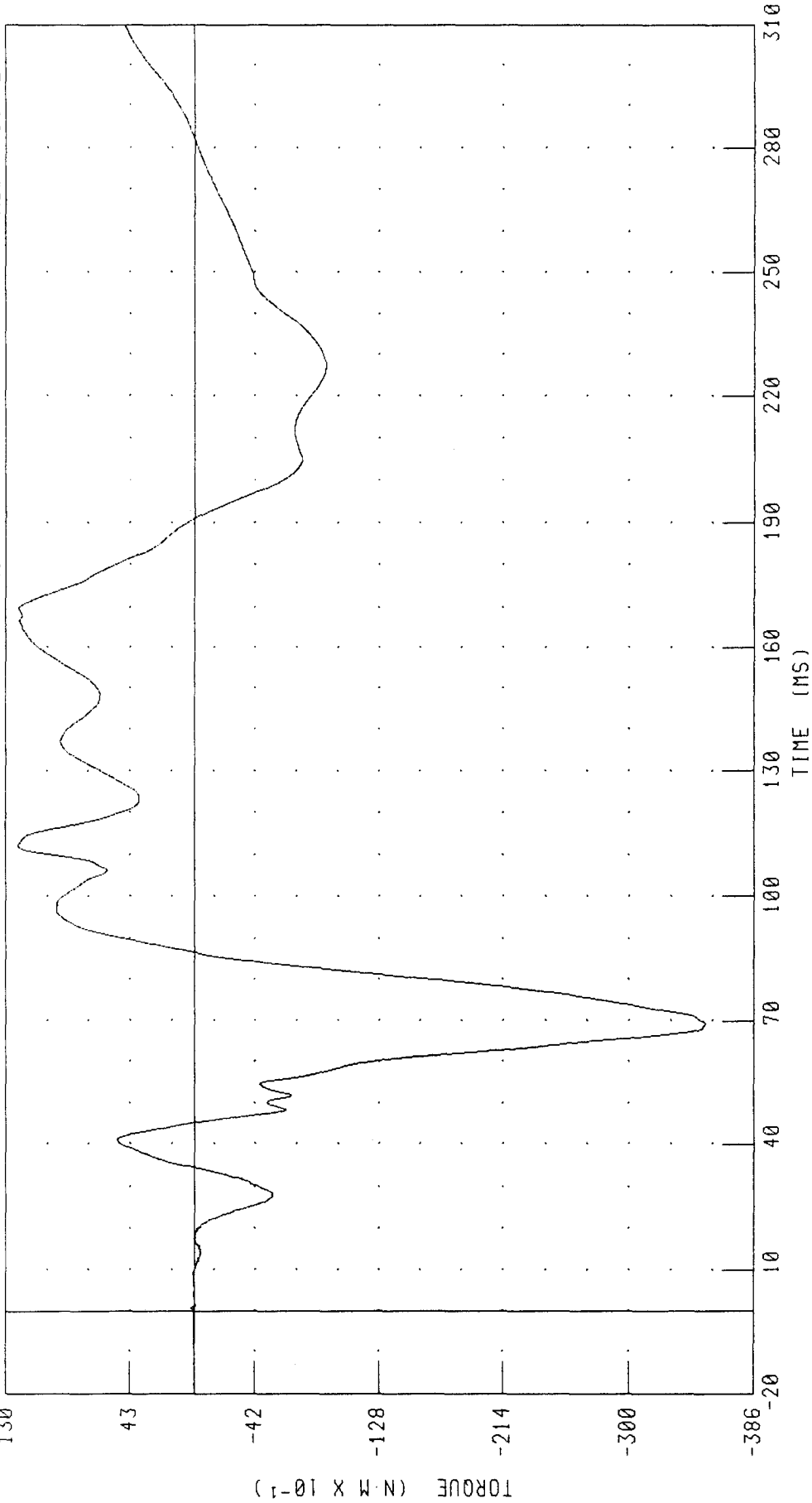
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

LEFT REAR PASSENGER NECK MOMENT ABOUT Y AXIS

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

TRC INC.



CHANNEL: NEKYM4 FILTER: CH. CLASS 600

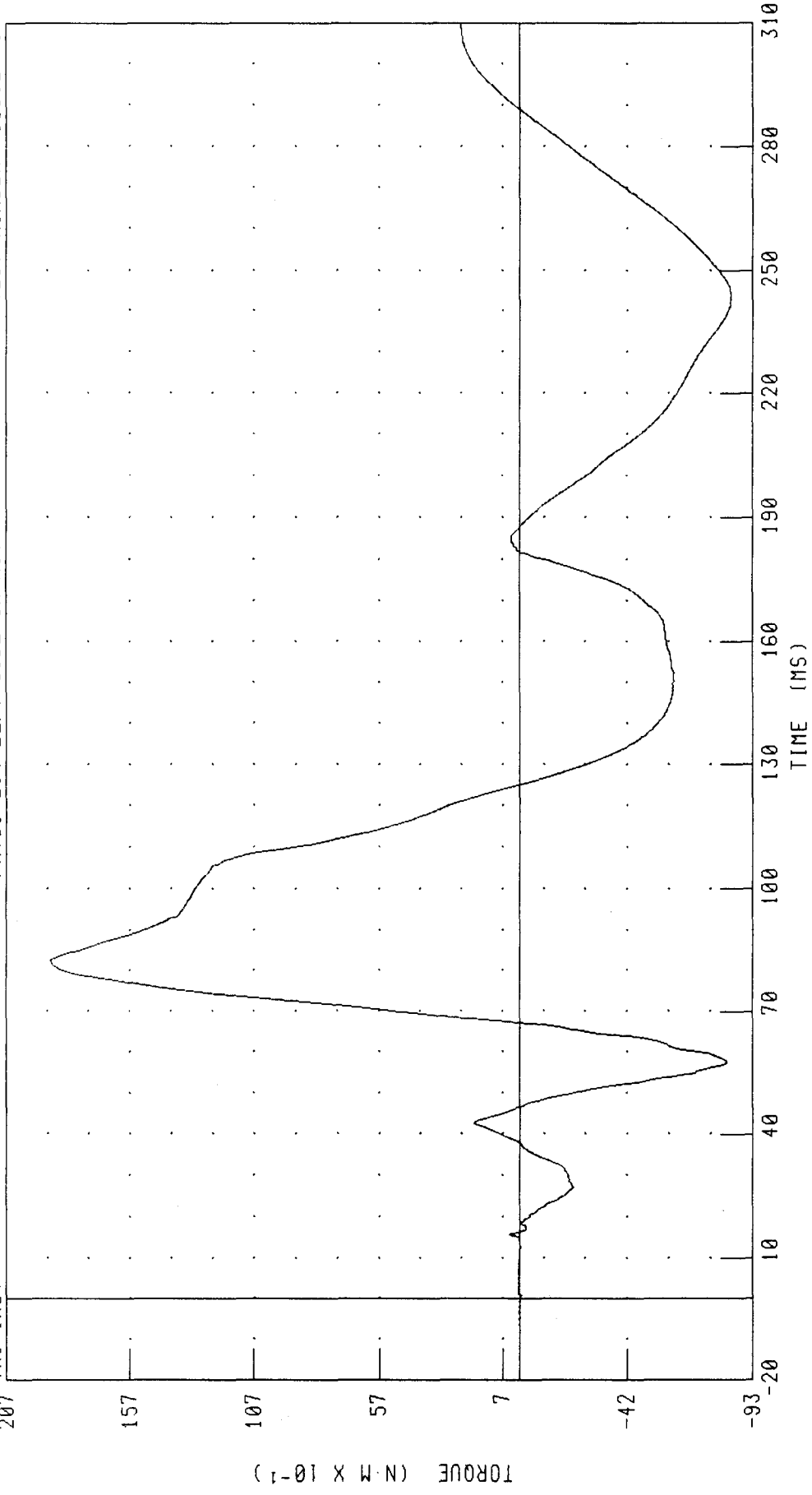
PEAK DATA: 12.17 N M @ 112.32 MS, -35.28 N M @ 69.20 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
LEFT REAR PASSENGER NECK MOMENT ABOUT Z AXIS

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

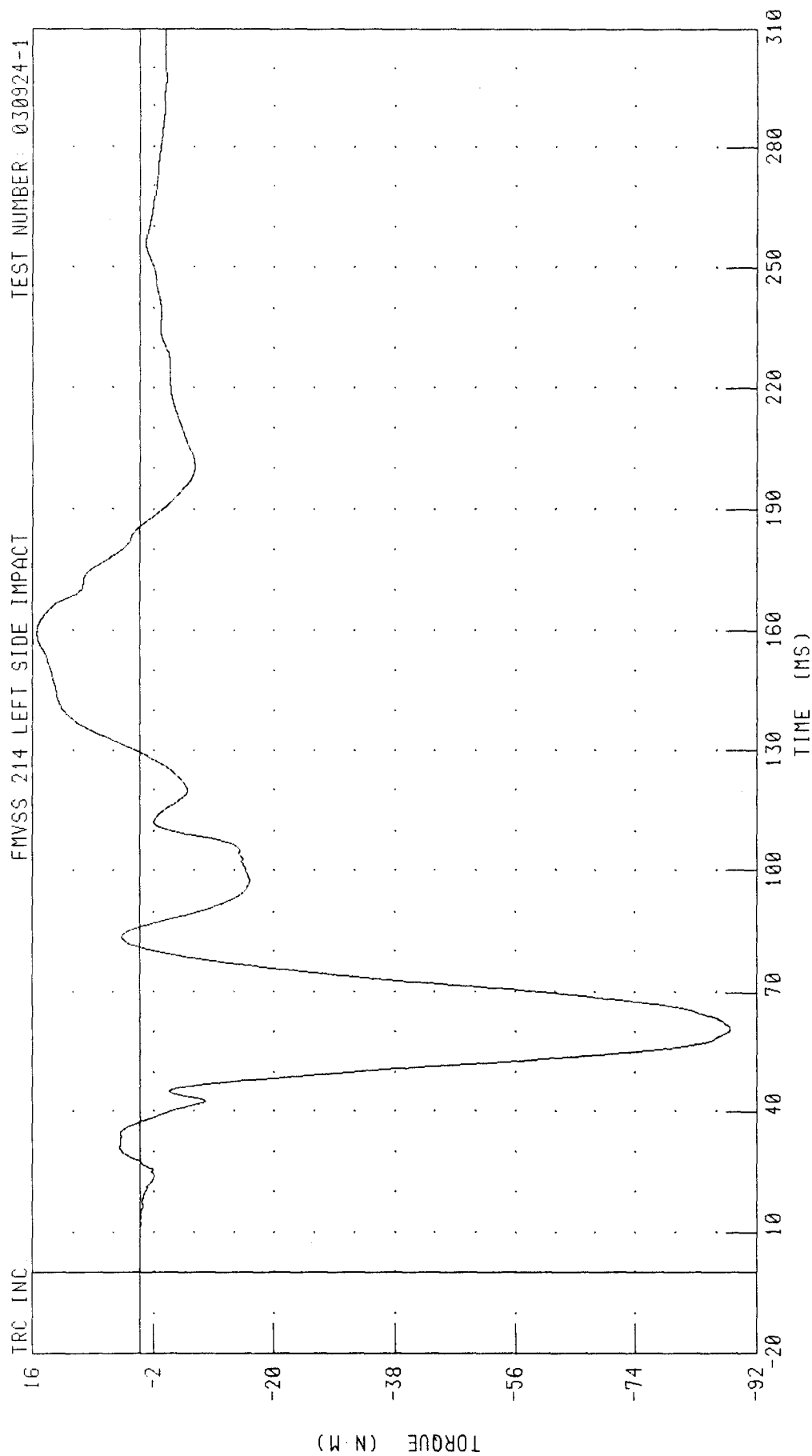
TRC INC.



CHANNEL: NEKZM4 FILTER: CH. CLASS 600

PEAK DATA: 18.91 N-M @ 82.48 MS; -8.46 N-M @ 243.36 MS

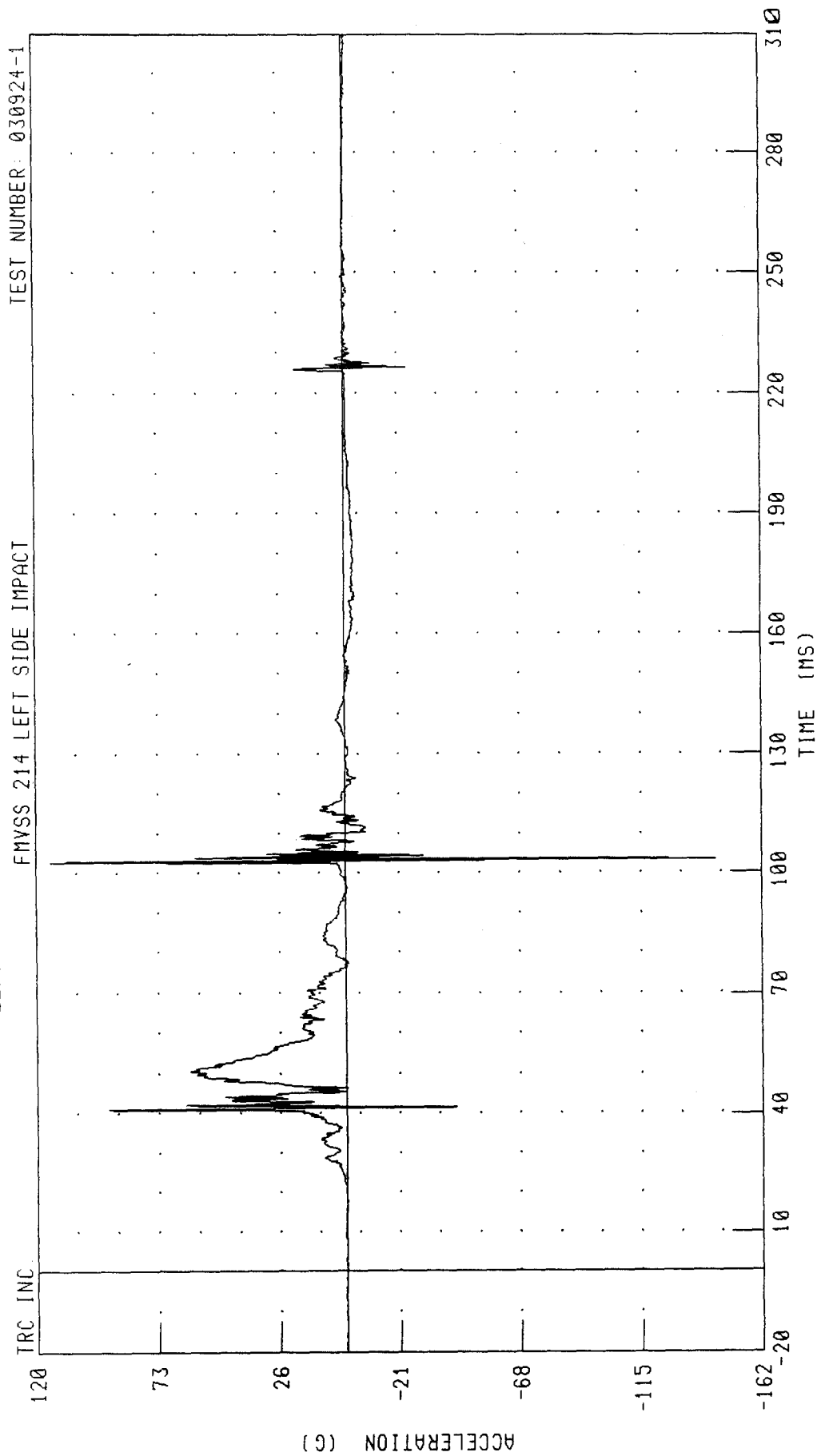
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
LEFT REAR PASSENGER NECK OCCIPITAL CONDYLE MOMENT ABOUT X AXIS



CHANNEL: NK0XM4 FILTER: CH. CLASS 600

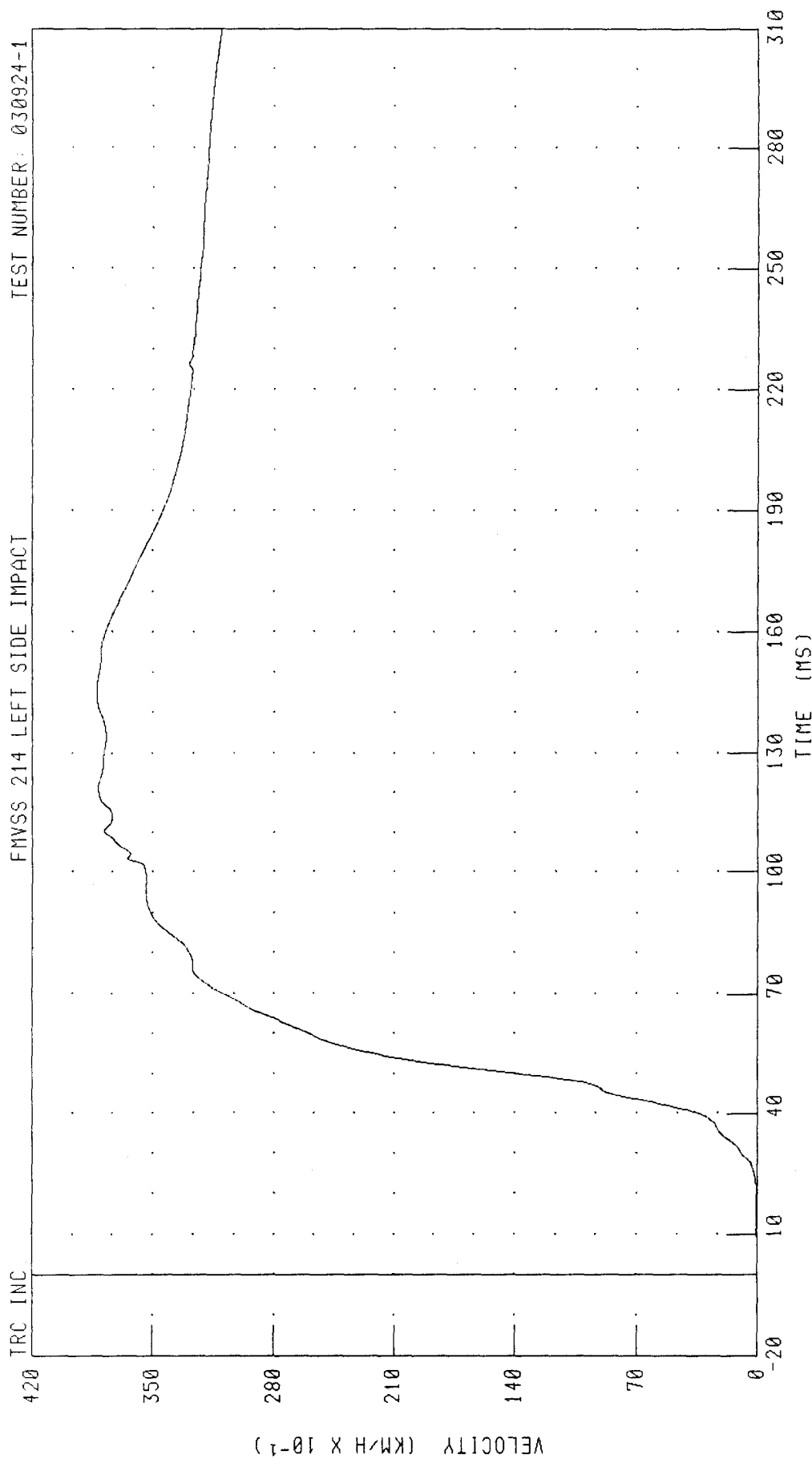
PEAK DATA: 15 39 N M @ 159 20 MS, -88 10 N M @ 60 56 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
LEFT REAR PASSENGER UPPER RIB Y-AXIS ACCELERATION



55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
LEFT REAR PASSENGER UPPER RIB Y-AXIS VELOCITY

FMVSS 214 LEFT SIDE IMPACT TEST NUMBER: 030924-1



CHANNEL: LURYV4 FILTER: CH. CLASS 180

PEAK DATA: 38.24 KM/H @ 144.88 MS; 0.00 KM/H @ 0.00 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
LEFT REAR PASSENGER LOWER RIB Y-AXIS ACCELERATION

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

TRC INC.

188

130

72

14

-44

-102

-160

ACCELERATION (G)

TIME (MS)

310

280

250

220

190

160

130

100

70

40

10

-20

CHANNEL: LLRYC4 FILTER: CH CLASS 1000

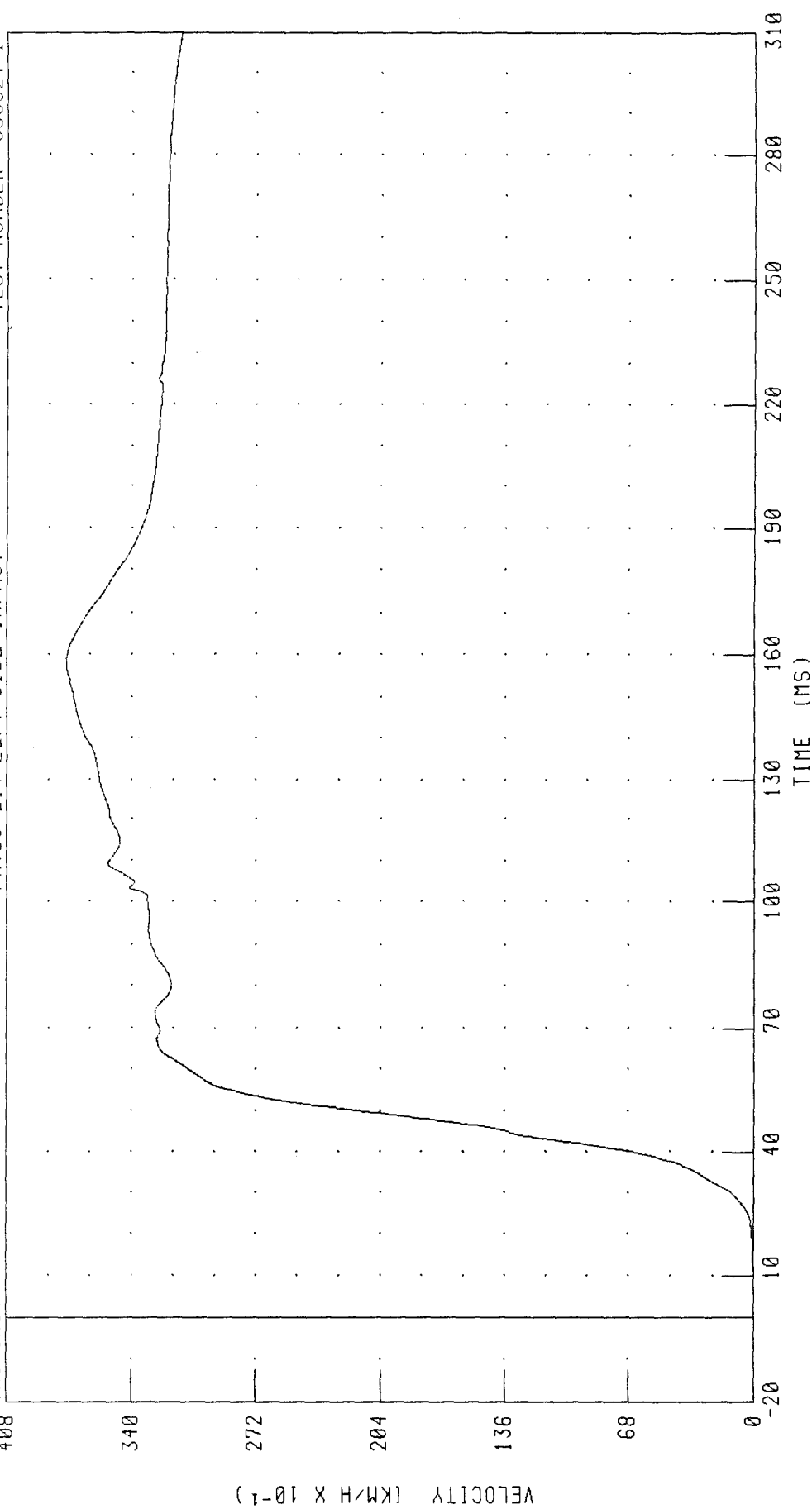
PEAK DATA: 165.92 G @ 102.96 MS, -154.17 G @ 103.44 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
LEFT REAR PASSENGER LOWER RIB Y-AXIS VELOCITY

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

TRC INC.



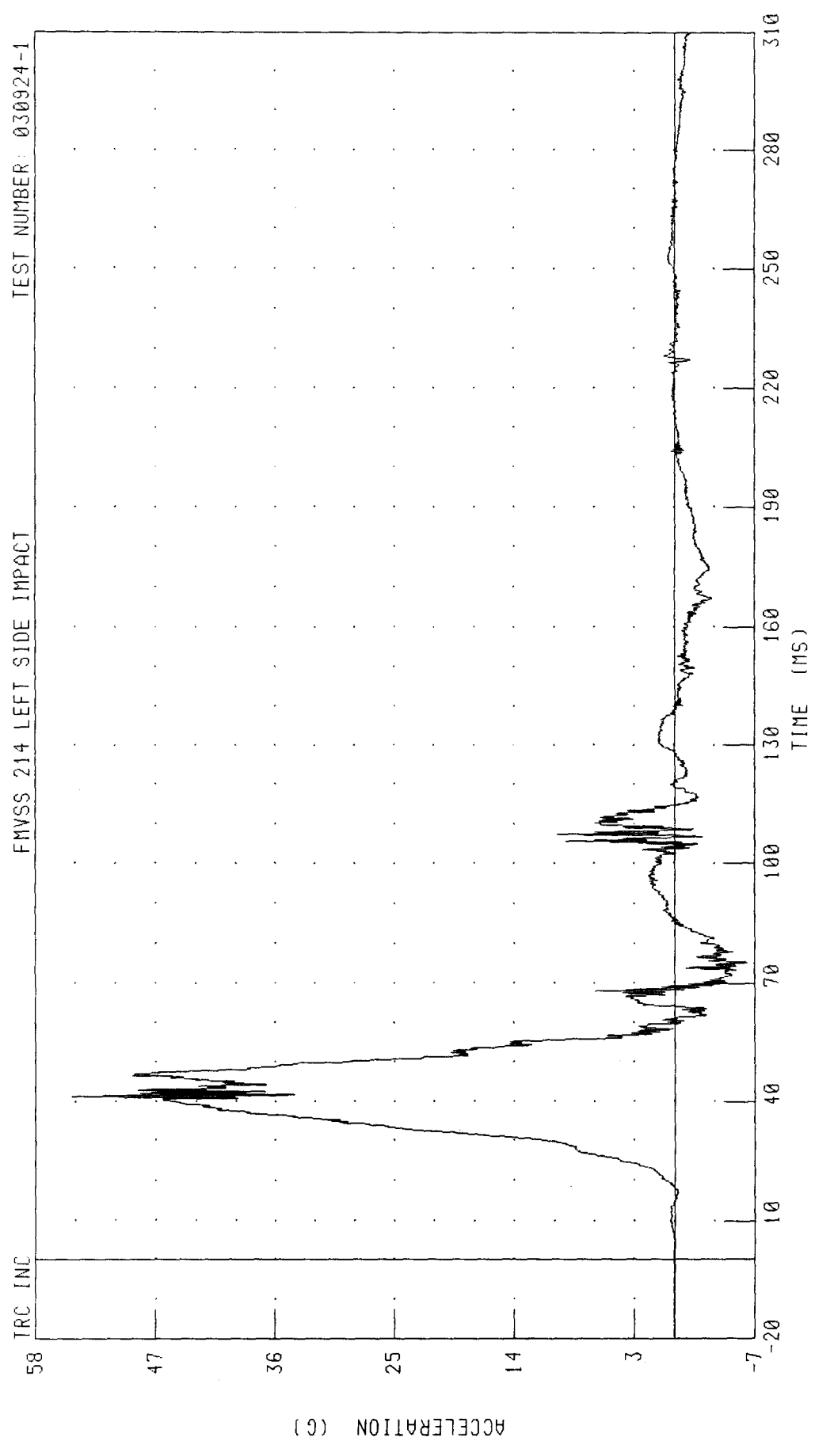
TIME (MS)

PEAK DATA: 37.54 KM/H @ 158.16 MS, 0.00 KM/H @ 0.00 MS

CHANNEL: LLRYV4 FILTER: CH. CLASS 180

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
LEFT REAR PASSENGER LOWER SPINE Y-AXIS ACCELERATION

TRC INC FMVSS 214 LEFT SIDE IMPACT TEST NUMBER: 030924-1



CHANNEL: T12YG4 FILTER: CH. CLASS 1000

PEAK DATA 55 36 G @ 41 44 MS; -6.69 G @ 75 28 MS

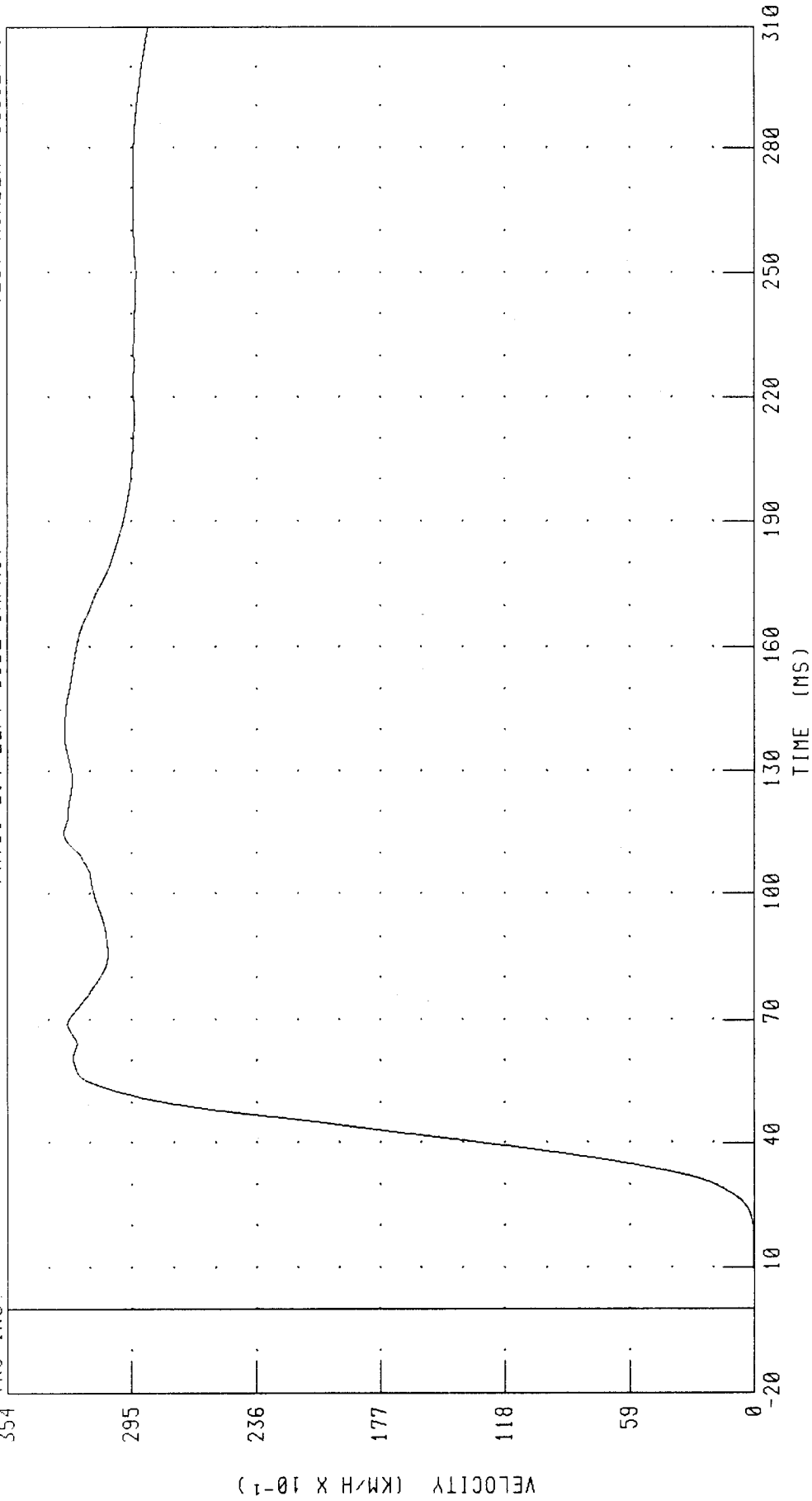
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

LEFT REAR PASSENGER LOWER SPINE Y-AXIS VELOCITY

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

TRC INC.



CHANNEL: T12VV4 FILTER: CH. CLASS 180

PEAK DATA: 32.71 km/h @ 114.88 ms; 0.00 km/h @ 0.00 ms

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
LEFT REAR PASSENGER PELVIS Y-AXIS ACCELERATION

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

TRC INC.

75

60

45

30

15

0

-15

ACCELERATION (G)

TIME (MS)

310

280

250

220

190

160

130

100

70

40

10

CHANNEL: PEVYG4 FILTER: CH. CLASS 1000

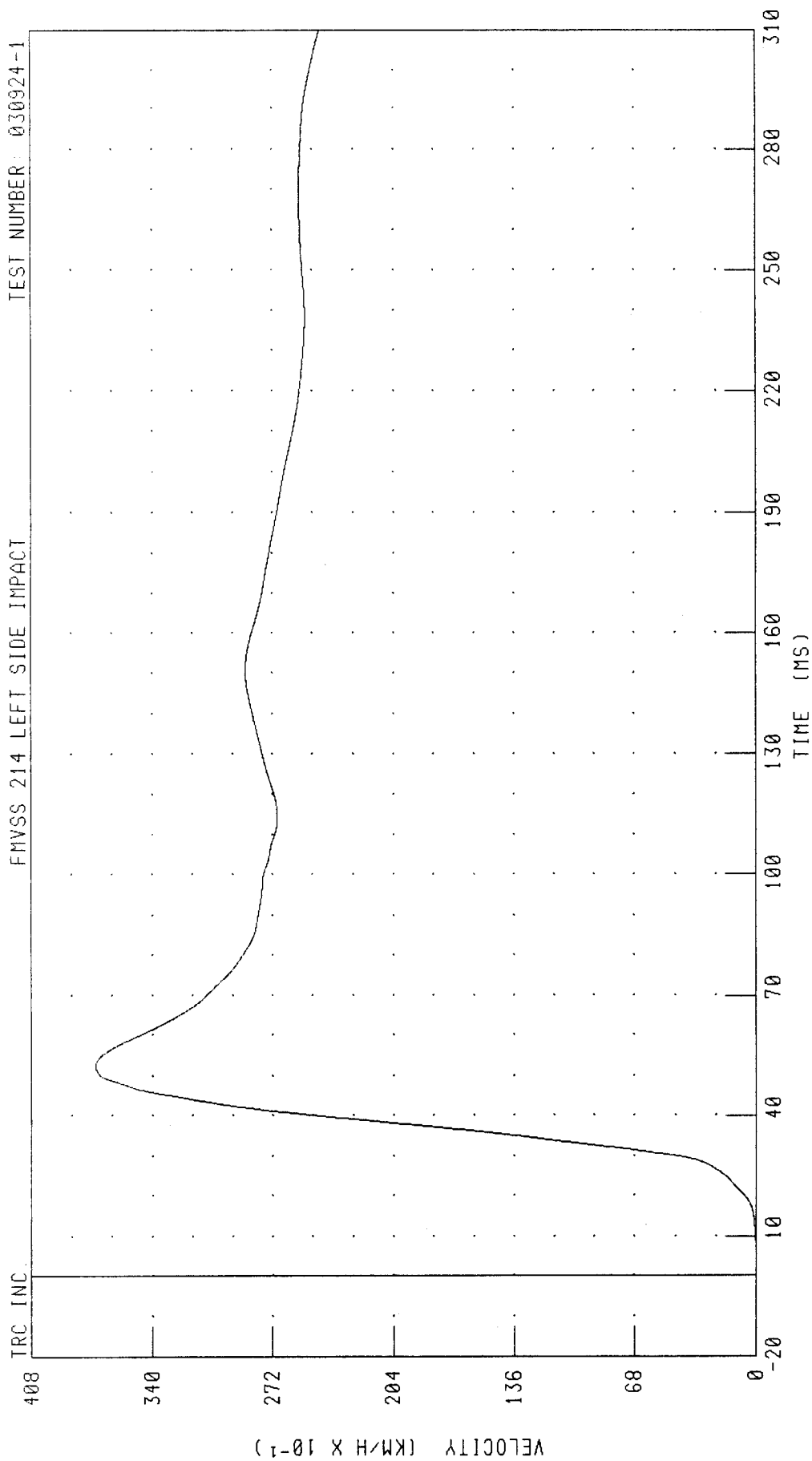
PEAK DATA: 67 64 G @ 38 96 MS, -14 38 G @ 60 56 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

LEFT REAR PASSENGER PELVIS Y-AXIS VELOCITY

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT



CHANNEL: PEVYV4 FILTER: CH. CLASS 180

PEAK DATA: 37 21 KM/H @ 52.40 MS; 0 00 KM/H @ 0 00 MS

Driver and Passenger Dummy Instrumentation Plots

Acceleration Data - Filter Class 1000 - Redundant

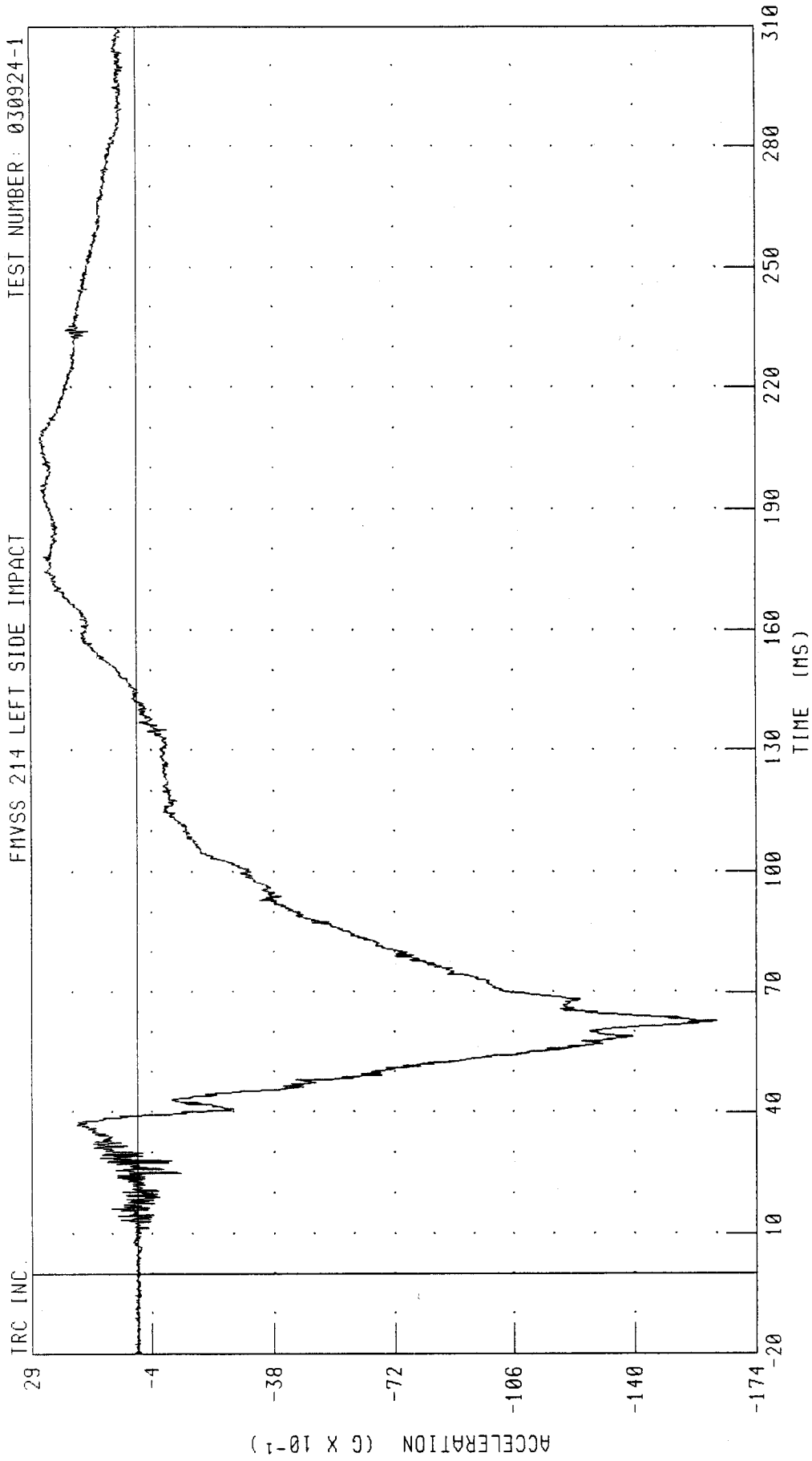
Integration Data - Filter Class 180 - Redundant

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

DRIVER HEAD X-AXIS REDUNDANT ACCELERATION

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030924-1



CHANNEL: HEDXR1 FILTER: CH CLASS 1000

PEAK DATA: 2.76 G @ 206.56 MS; -16.27 G @ 62.64 MS

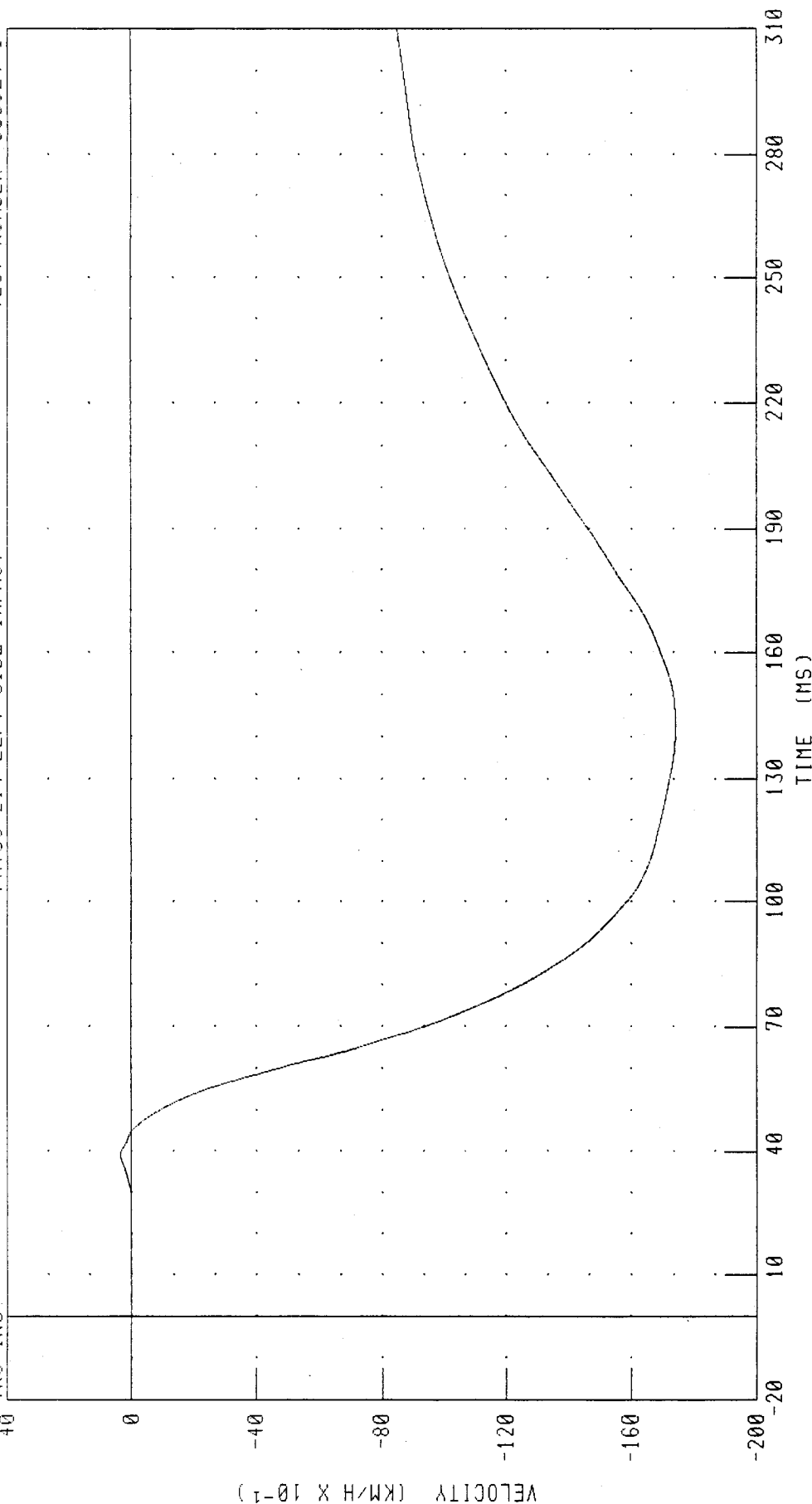
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

DRIVER HEAD X-AXIS REDUNDANT VELOCITY

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

TRC INC.



CHANNEL HEDXVI FILTER: CH. CLASS 180

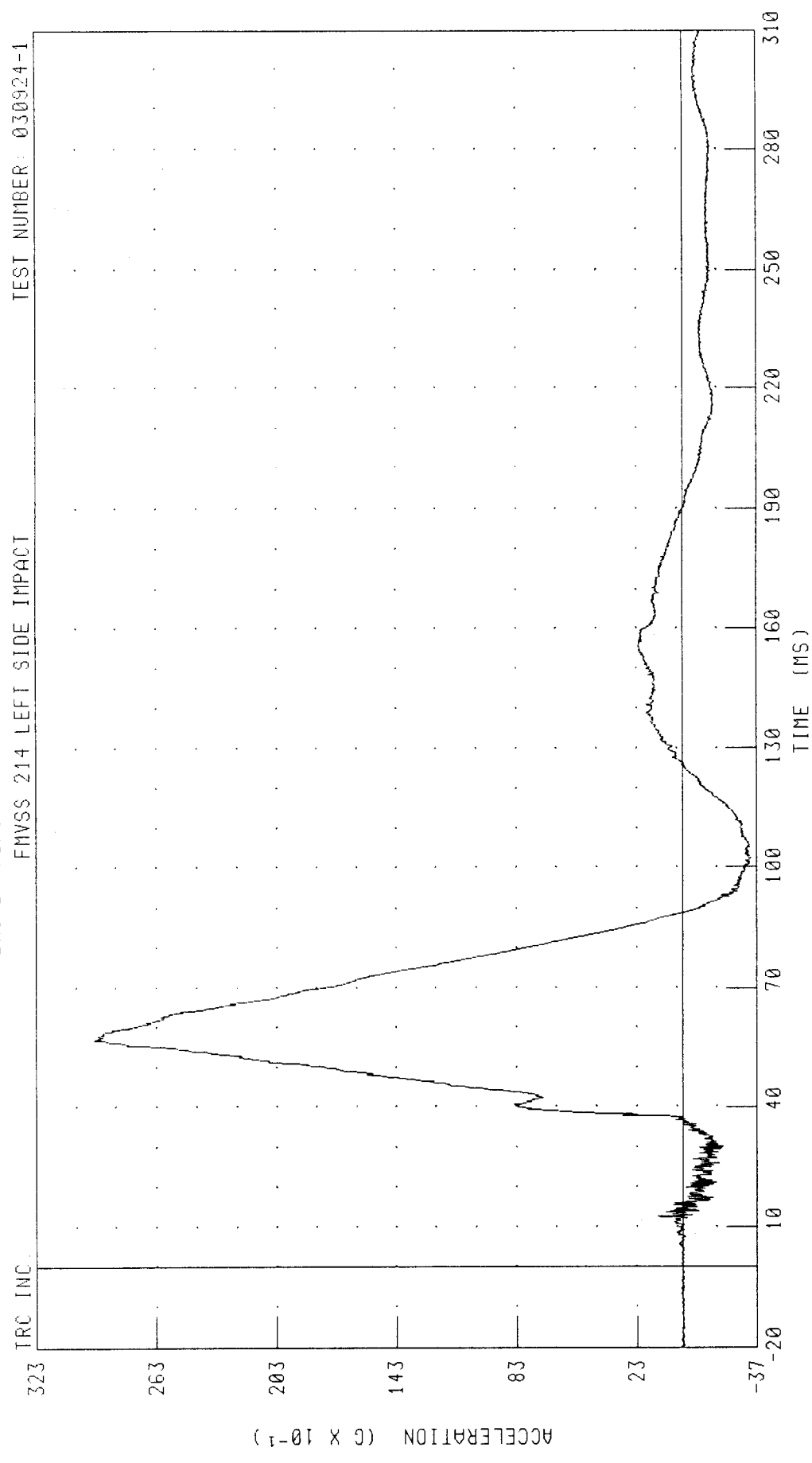
PEAK DATA: 0 36 KM/H @ 39 12 MS; -17 40 KM/H @ 142 32 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

DRIVER HEAD Y-AXIS REDUNDANT ACCELERATION

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT



CHANNEL: HEDYR1 FILTER: CH. CLASS 1000

PEAK DATA 29 43 G @ 57.04 MS, -3 43 G @ 102 16 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

DRIVER HEAD Y-AXIS REDUNDANT VELOCITY

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

TRC INC

293

243

193

143

93

43

-7

-20

VELOCITY (KM/H X 10⁻¹)

TIME (MS)

CHANNEL: HEDYVI FILTER: CH CLASS 180

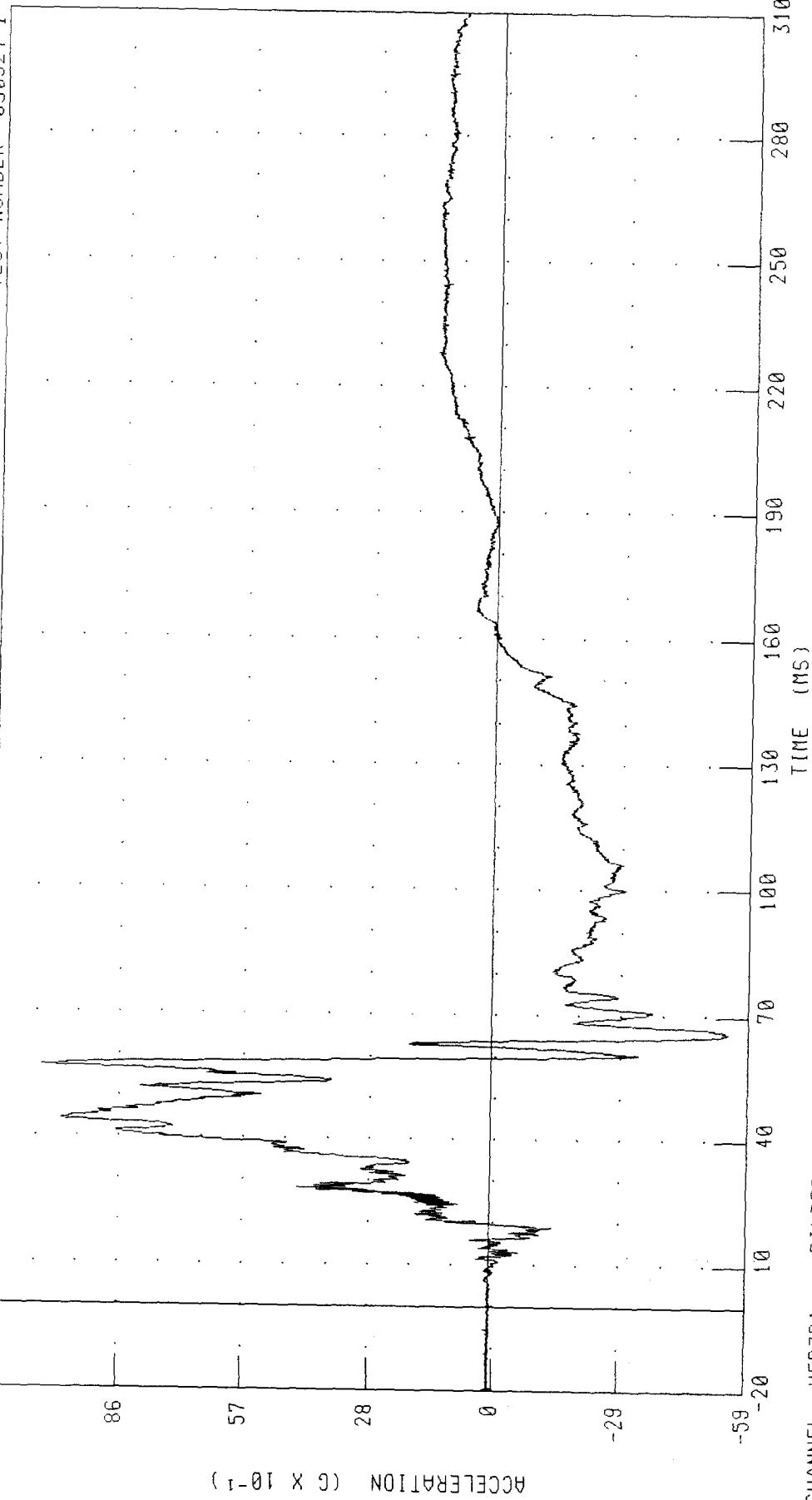
PEAK DATA: 26 62 KM/H @ 88 88 MS, -0.67 KM/H @ 36 96 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
DRIVER HEAD Z-AXIS REDUNDANT ACCELERATION

TRC INC.

ENVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030924-1



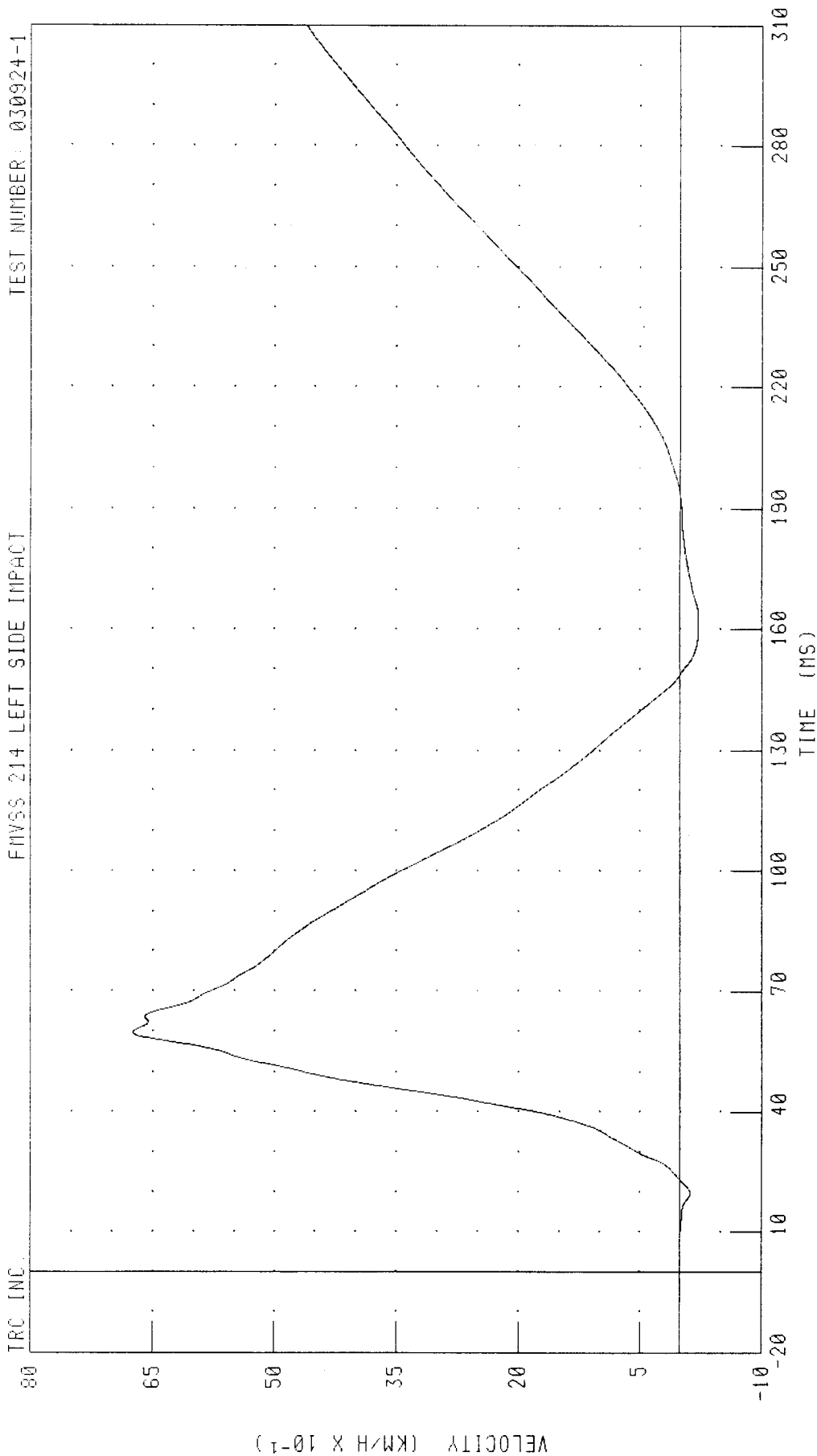
CHANNEL: HEDZR1 FILTER: CH CLASS 1000

PEAK DATA 10 42 G @ 57 44 MS, -5 45 G @ 65 76 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
DRIVER HEAD Z-AXIS REDUNDANT VELOCITY

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

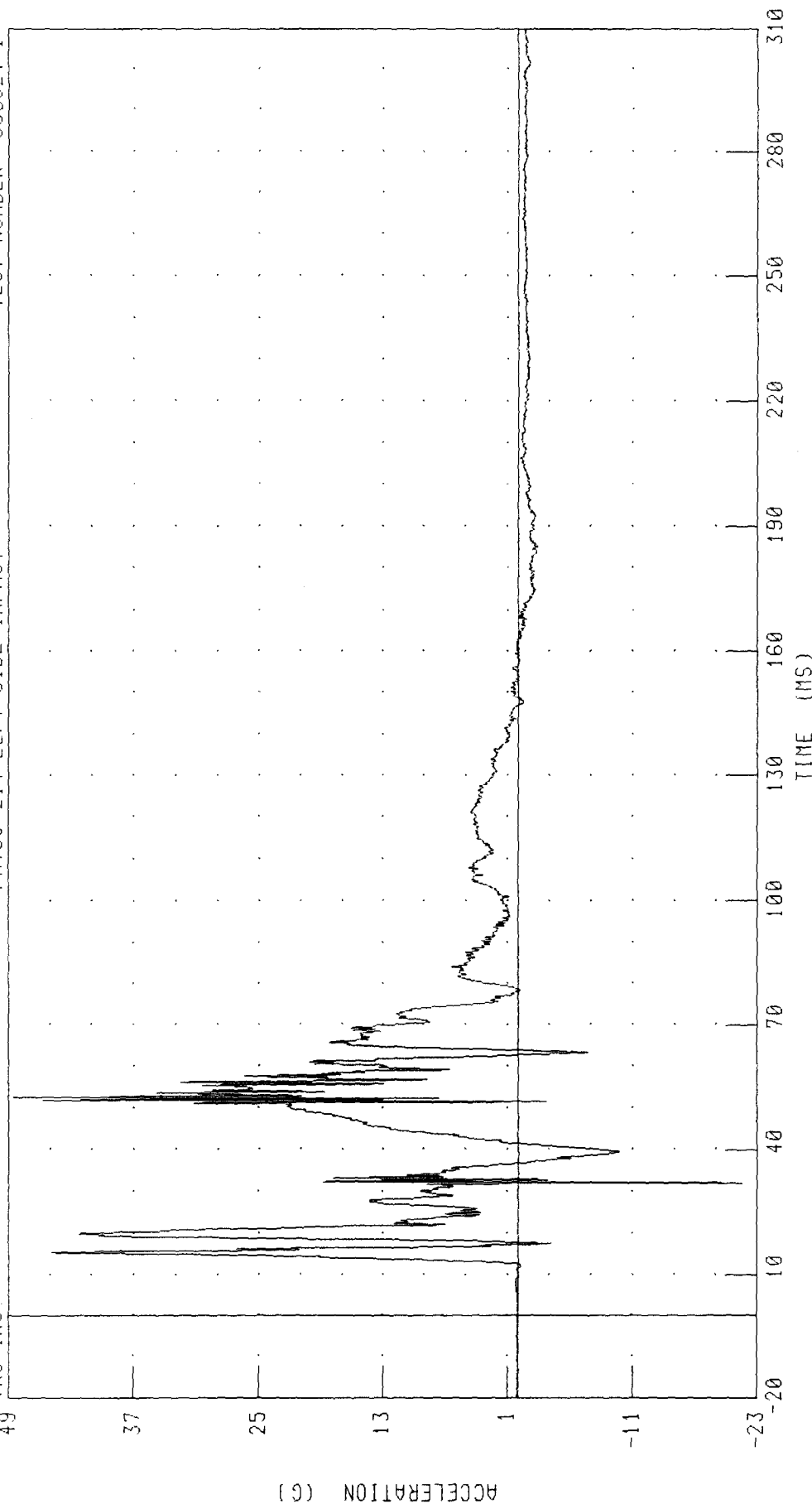


CHANNEL: HEDZVI FILTER: CH CLASS 180

PEAK DATA 6 75 KM/H @ 59 68 MS, -0 23 KM/H @ 161 52 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
DRIVER UPPER RIB Y-AXIS REDUNDANT ACCELERATION

TRC INC. FMVSS 214 LEFT SIDE IMPACT TEST NUMBER: 030924-1



PEAK DATA: 48 54 G @ 52 64 MS, -21 54 G @ 32 08 MS

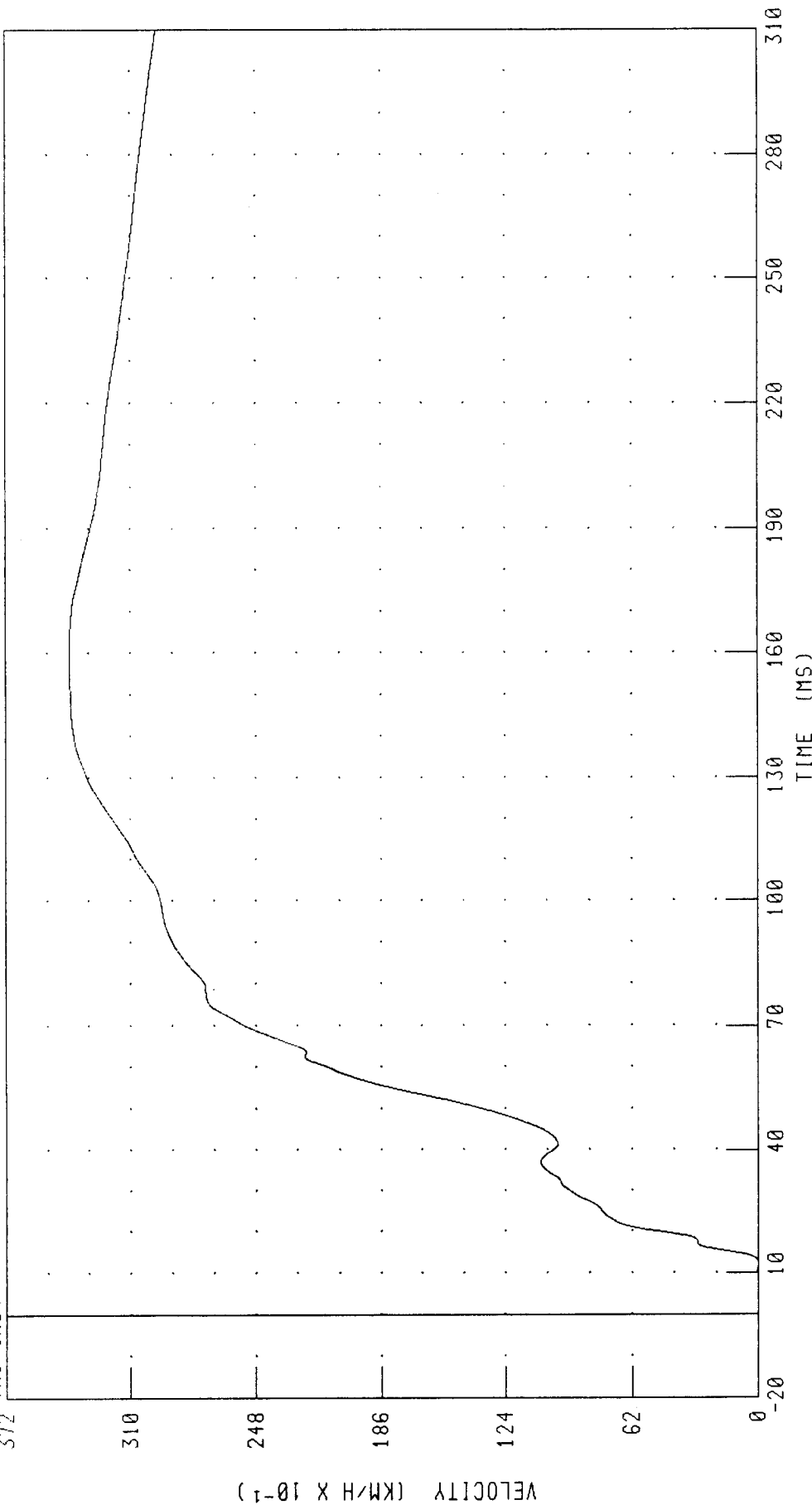
CHANNEL: LURYR1 FILTER: CH. CLASS 1000

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
 DRIVER UPPER RIB Y-AXIS REDUNDANT VELOCITY

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

TRC INC.

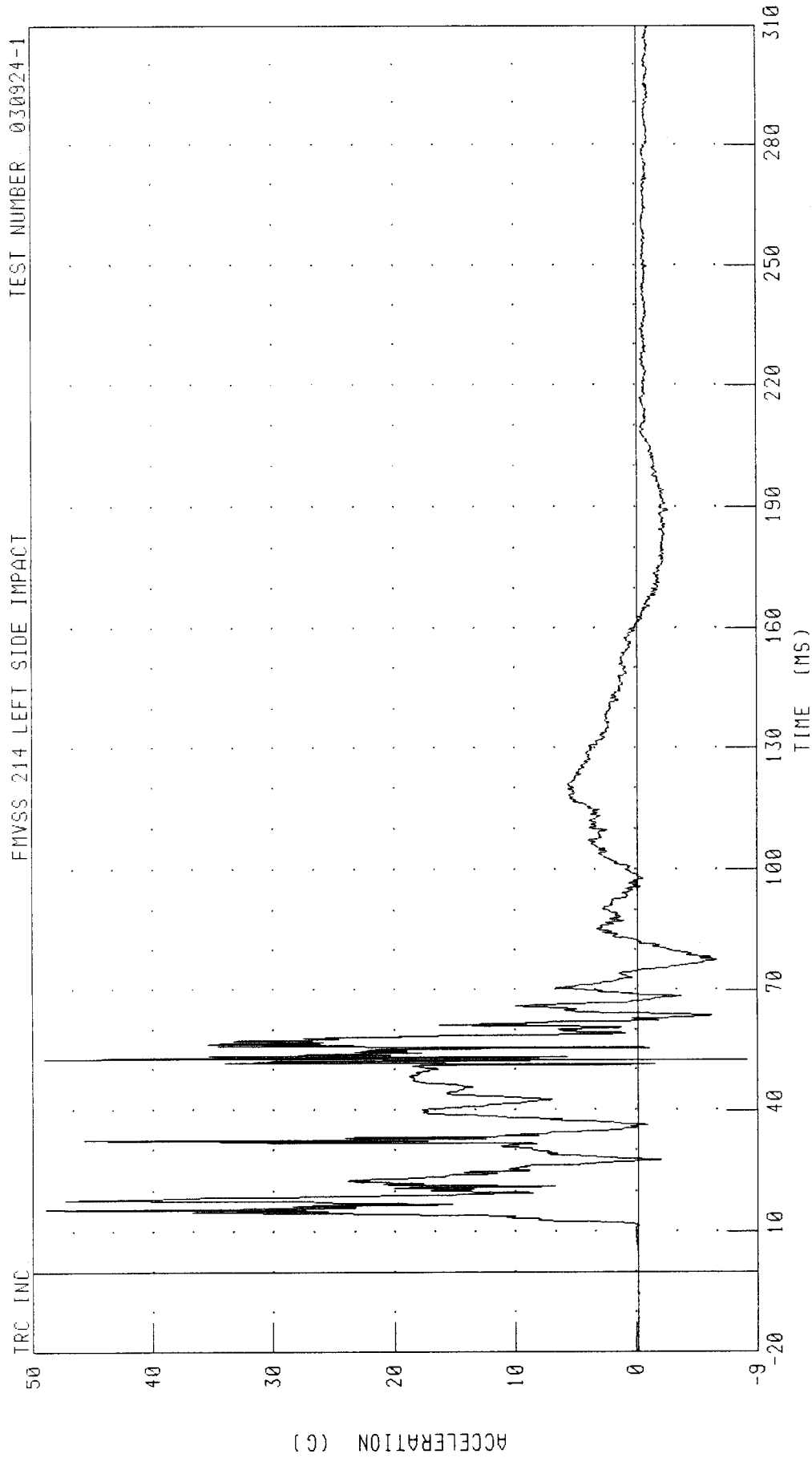


CHANNEL: LURYVI FILTER: CH. CLASS 180

PEAK DATA: 34 01 KM/H @ 162 64 MS, 0 00 KM/H @ 0 00 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

DRIVER LOWER RIB Y-AXIS REDUNDANT ACCELERATION



CHANNEL: LLRYR1 FILTER: CH. CLASS 1000

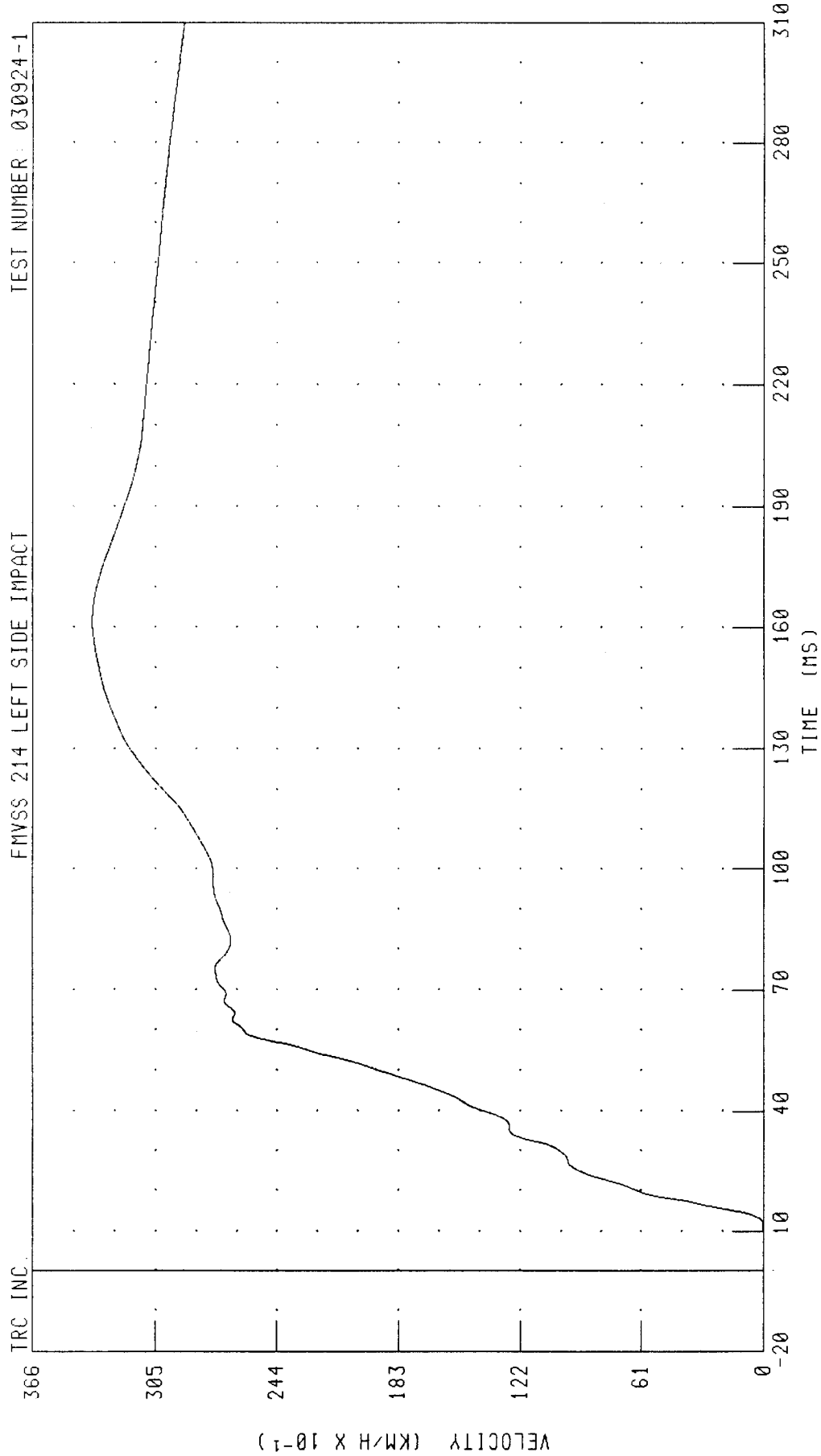
PEAK DATA: 49 24 G @ 52 72 MS, -8 94 G @ 52 32 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

DRIVER LOWER RIB Y-AXIS REDUNDANT VELOCITY

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

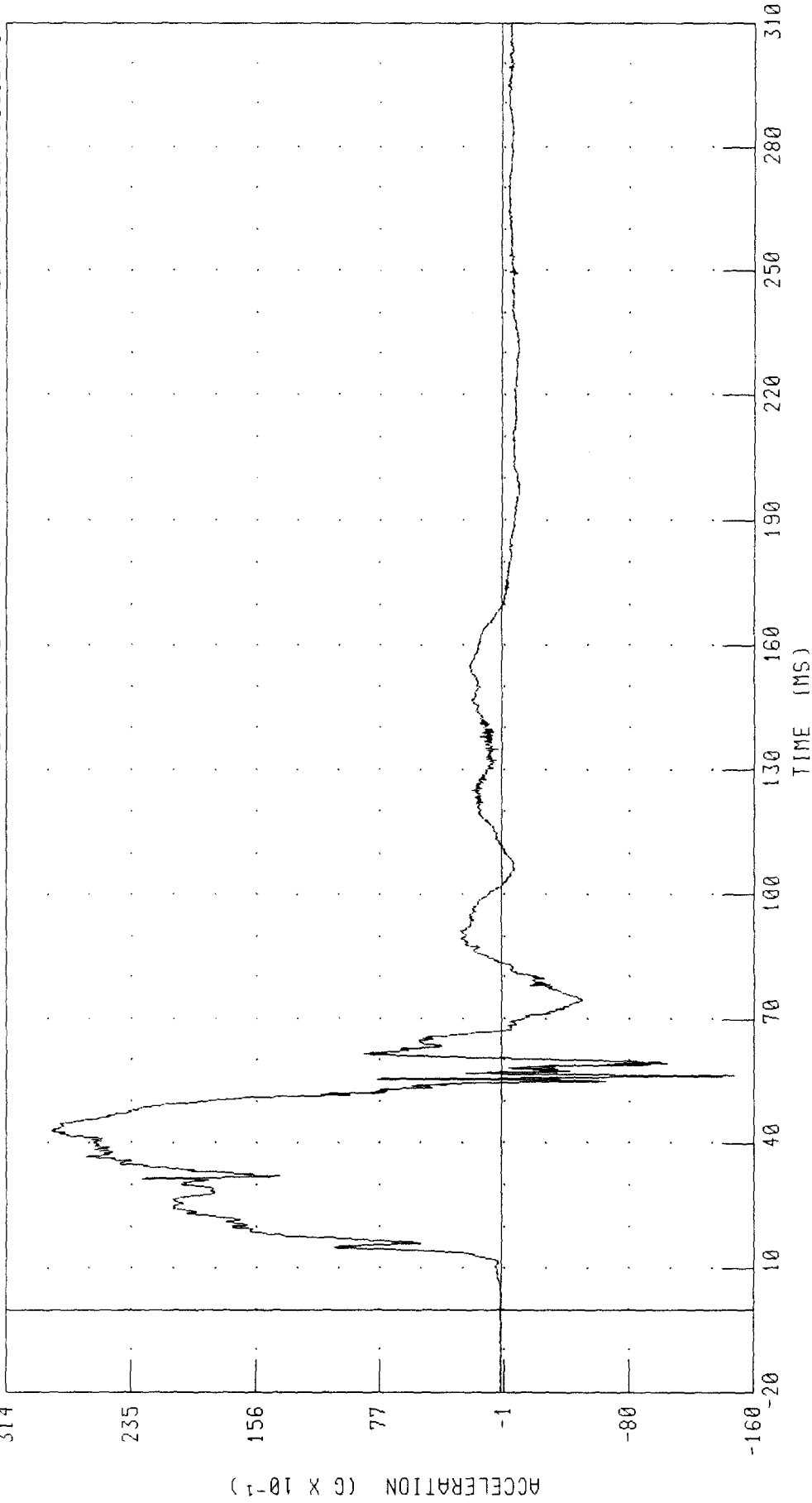


CHANNEL: LLRYVI FILTER: CH CLASS 180

PEAK DATA: 33.65 KM/H @ 161.36 MS, 0.00 KM/H @ 0.00 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
DRIVER LOWER SPINE Y-AXIS REDUNDANT ACCELERATION

TRC INC. FMVSS 214 LEFT SIDE IMPACT TEST NUMBER: 030924-1



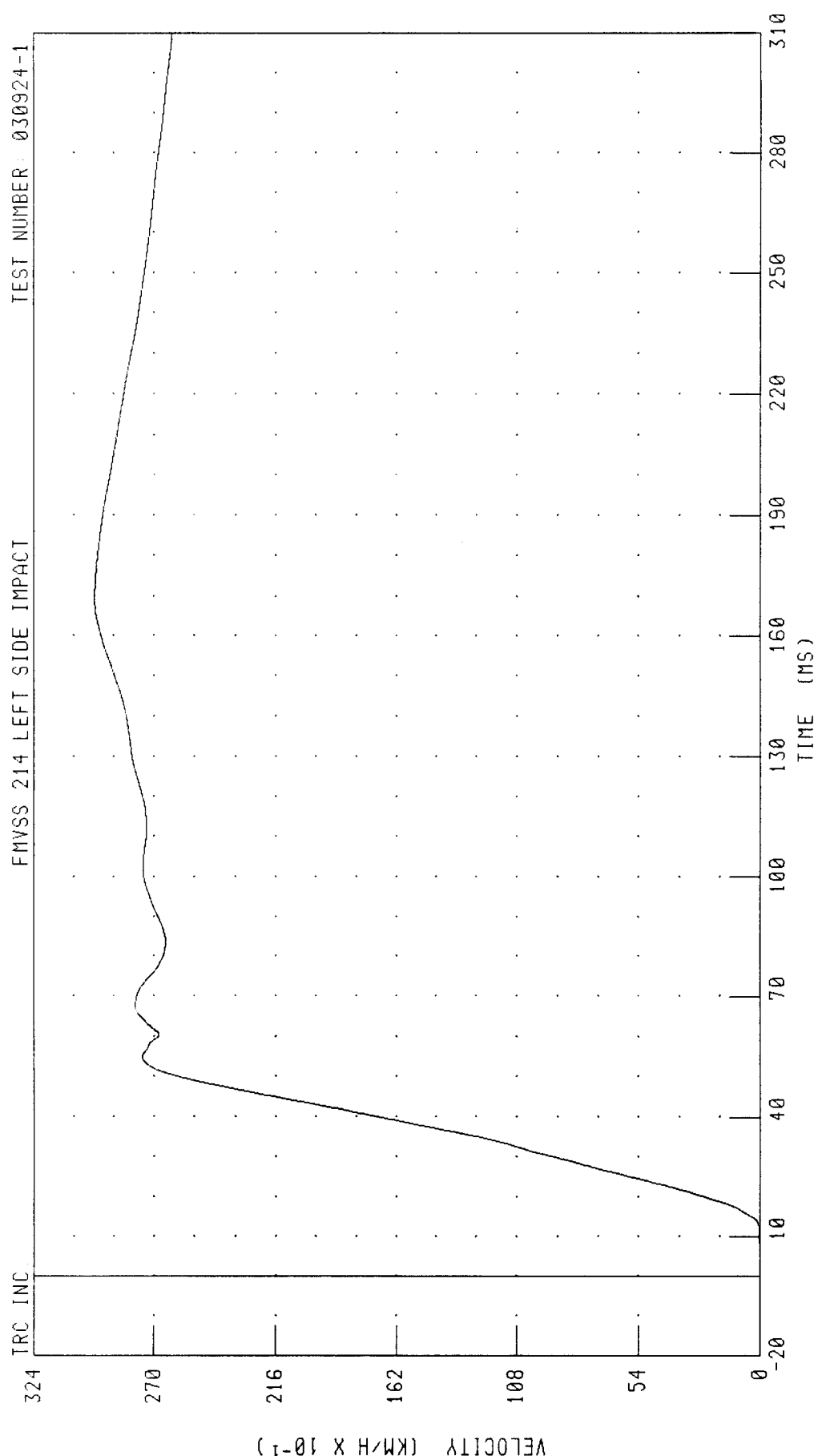
CHANNEL: T12YR1 FILTER: CH. CLASS 1000

PEAK DATA: 28 57 G @ 42.88 MS, -14 76 G @ 56.32 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
 DRIVER LOWER SPINE Y-AXIS REDUNDANT VELOCITY

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

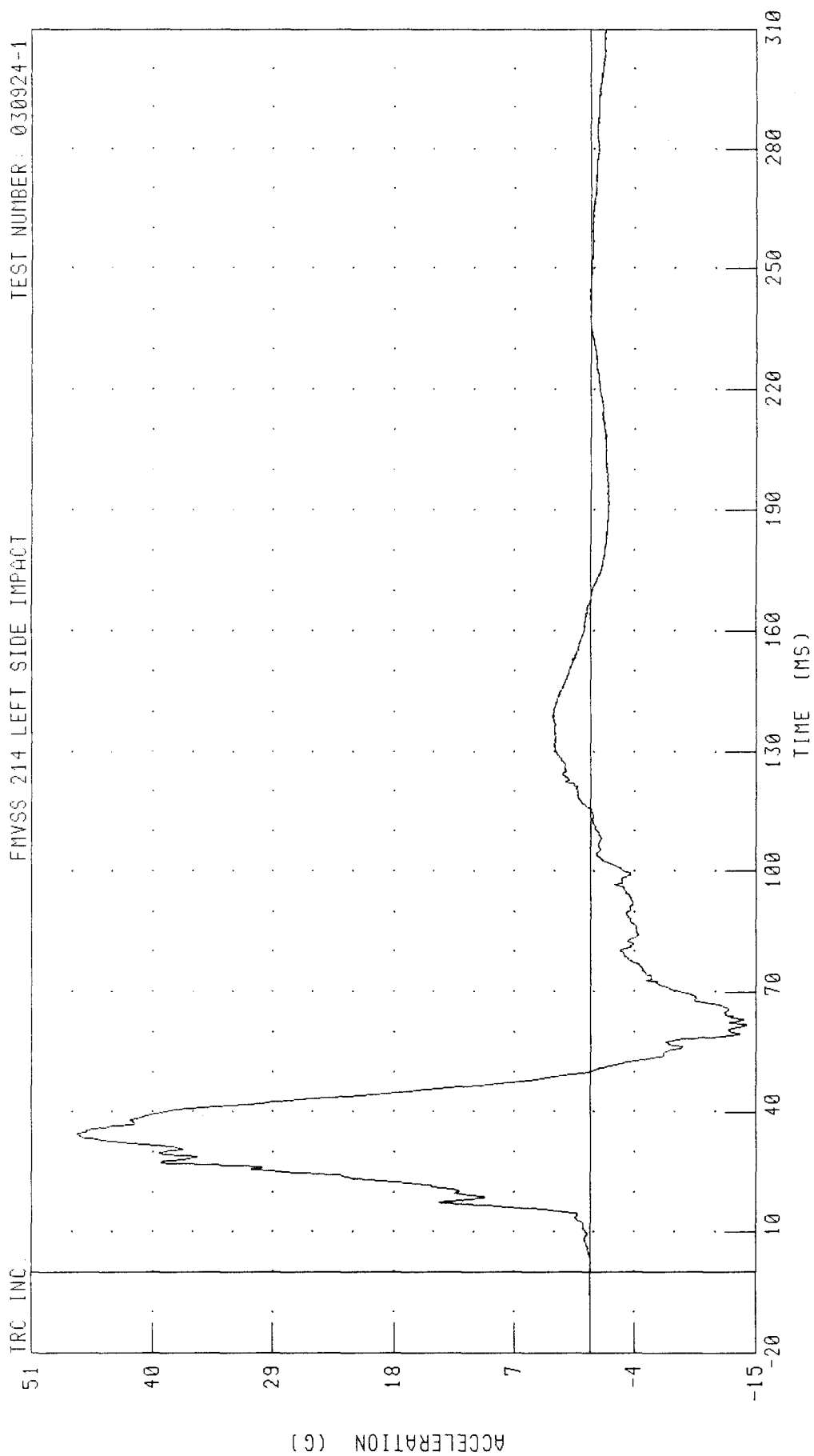


CHANNEL: T12YVI FILTER: CH CLASS 180

PEAK DATA: 29.65 KM/H @ 169.60 MS, 0.00 KM/H @ 0.00 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
DRIVER PELVIS Y-AXIS REDUNDANT ACCELERATION

FMVSS 214 LEFT SIDE IMPACT TEST NUMBER: 030924-1



CHANNEL: PEVYR1 FILTER: CH CLASS 1000

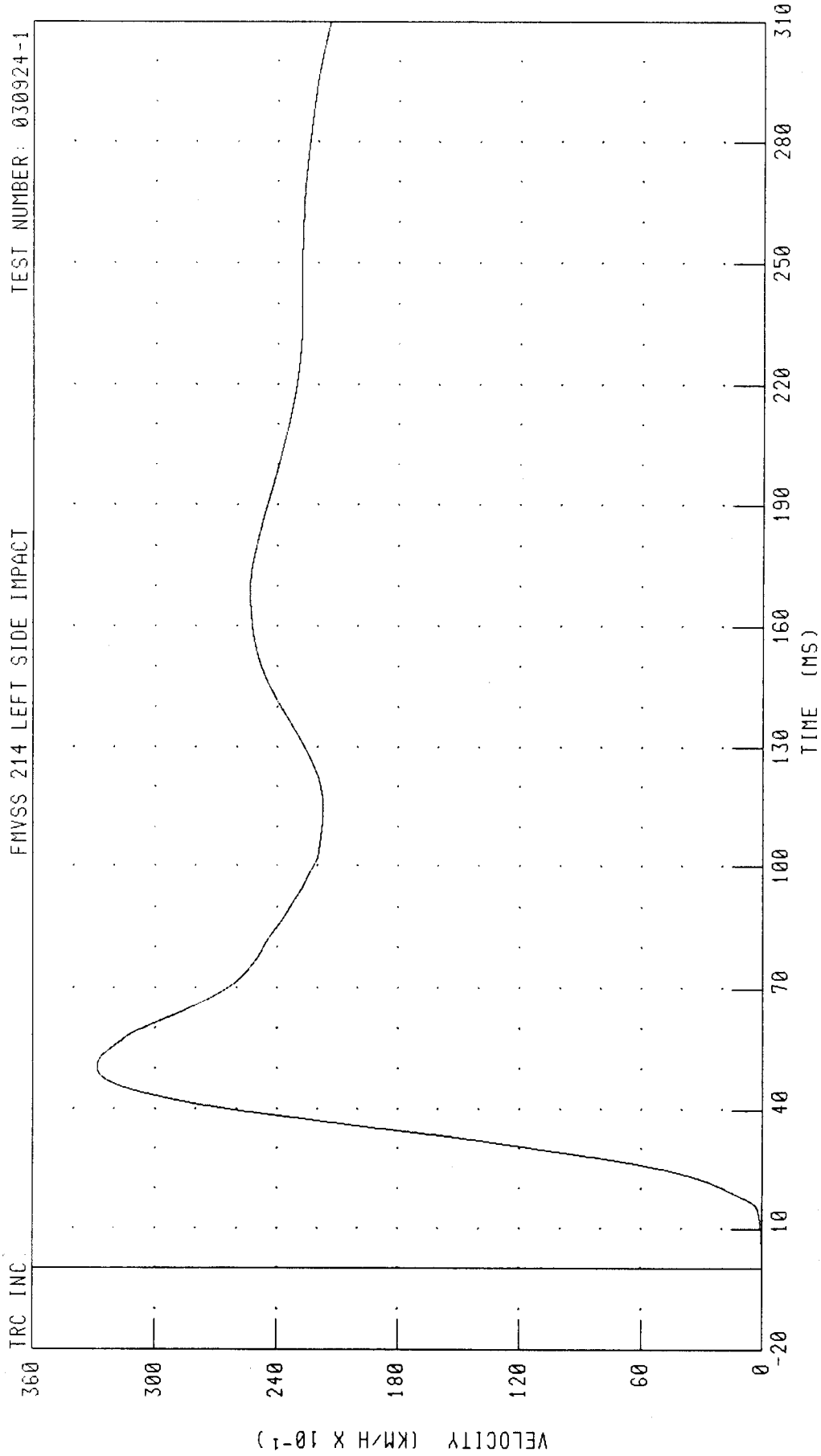
PEAK DATA: 46.88 G @ 34.64 MS, -14.17 G @ 61.84 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

DRIVER PELVIS Y-AXIS REDUNDANT VELOCITY

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT



CHANNEL: PEVYVI FILTER: CH. CLASS 180

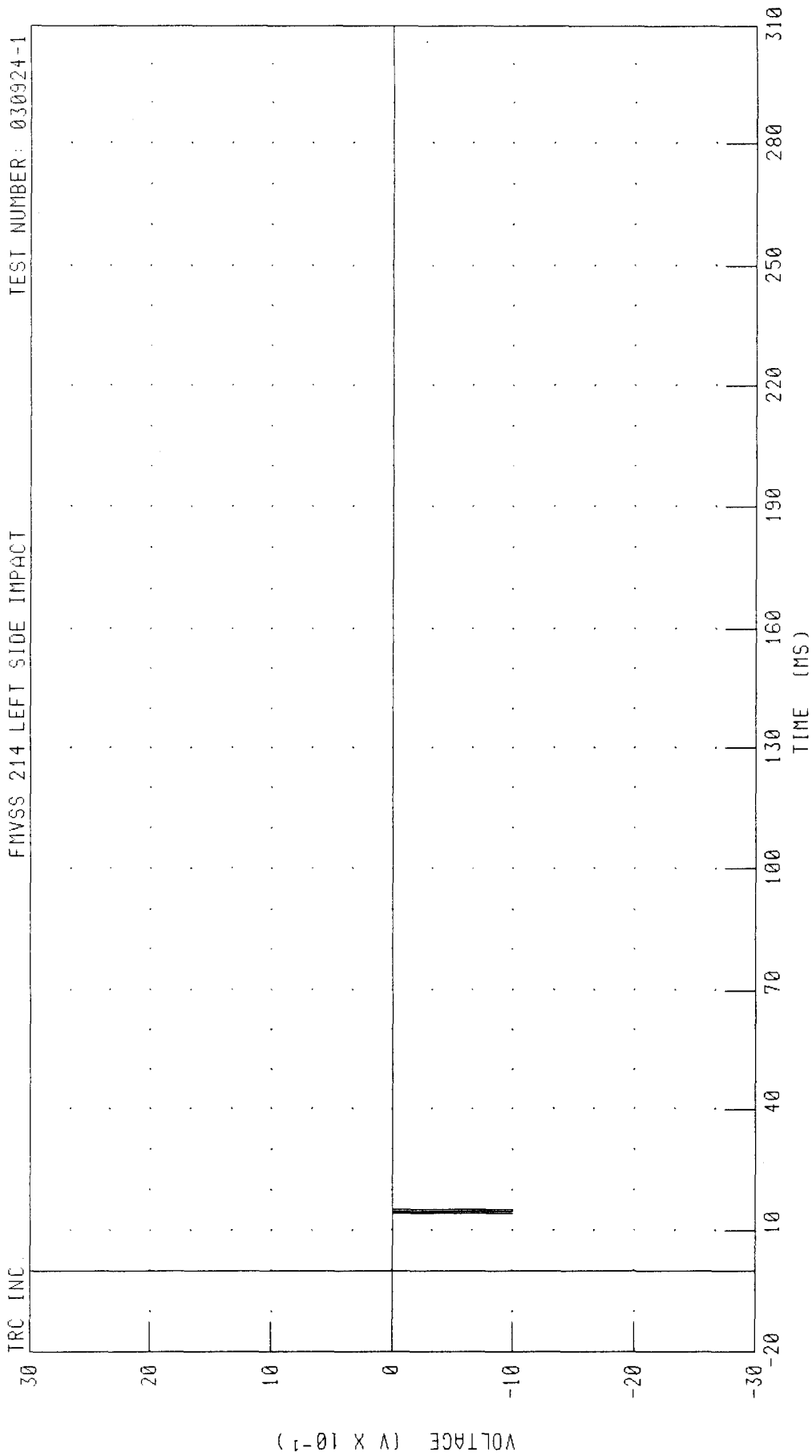
PEAK DATA: 32.83 KM/H @ 50.32 MS; 0.00 KM/H @ 0.00 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

DRIVER SHOULDER CONTACT SWITCH

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030924-1



CHANNEL: SHLET1 FILTER: CH CLASS 1000

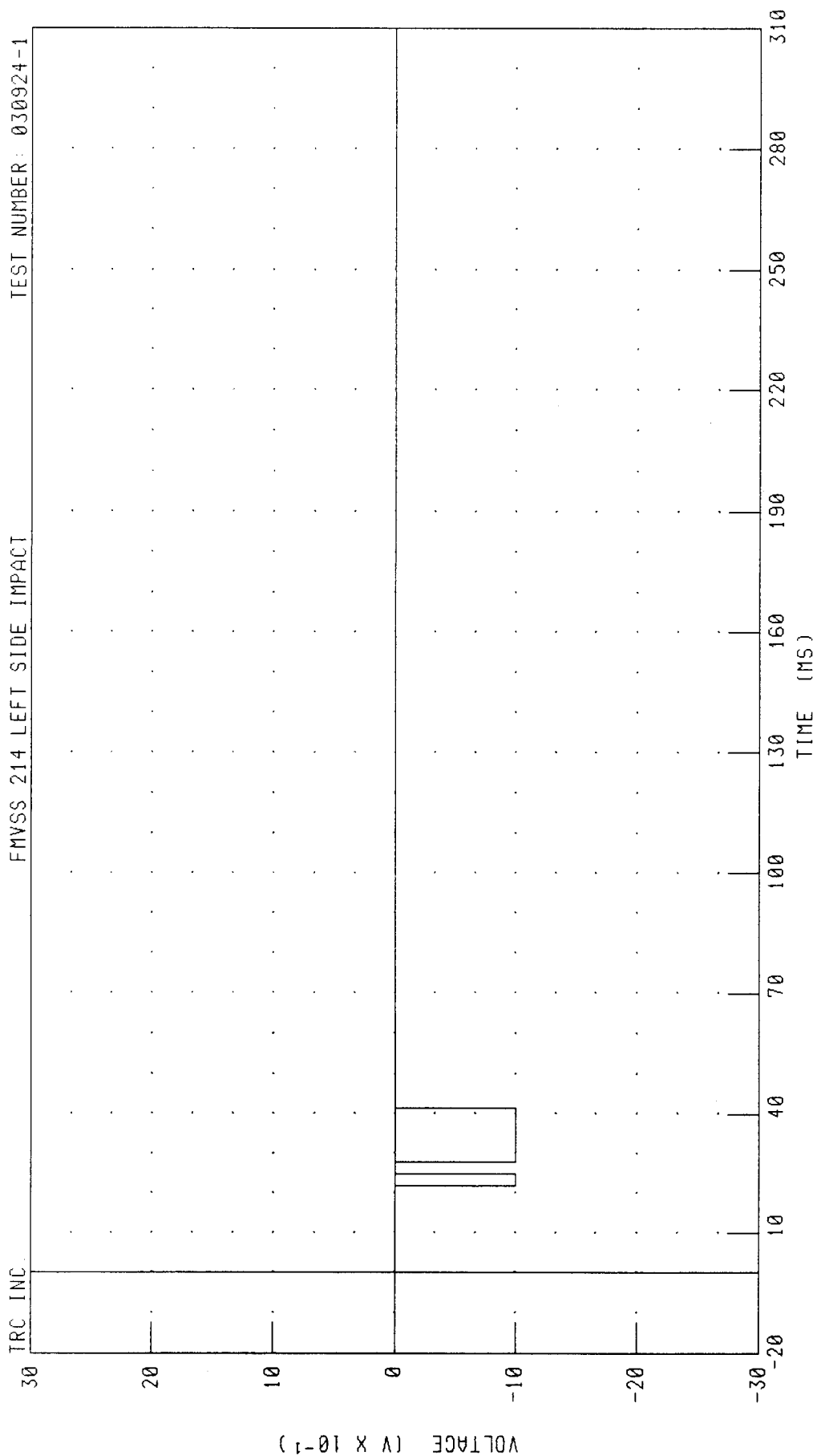
PEAK DATA: 0 00 V @ 310 00 MS, -1 00 V @ 14 24 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

DRIVER PELVIS CONTACT SWITCH

FMVSS 214 LEFT SIDE IMPACT

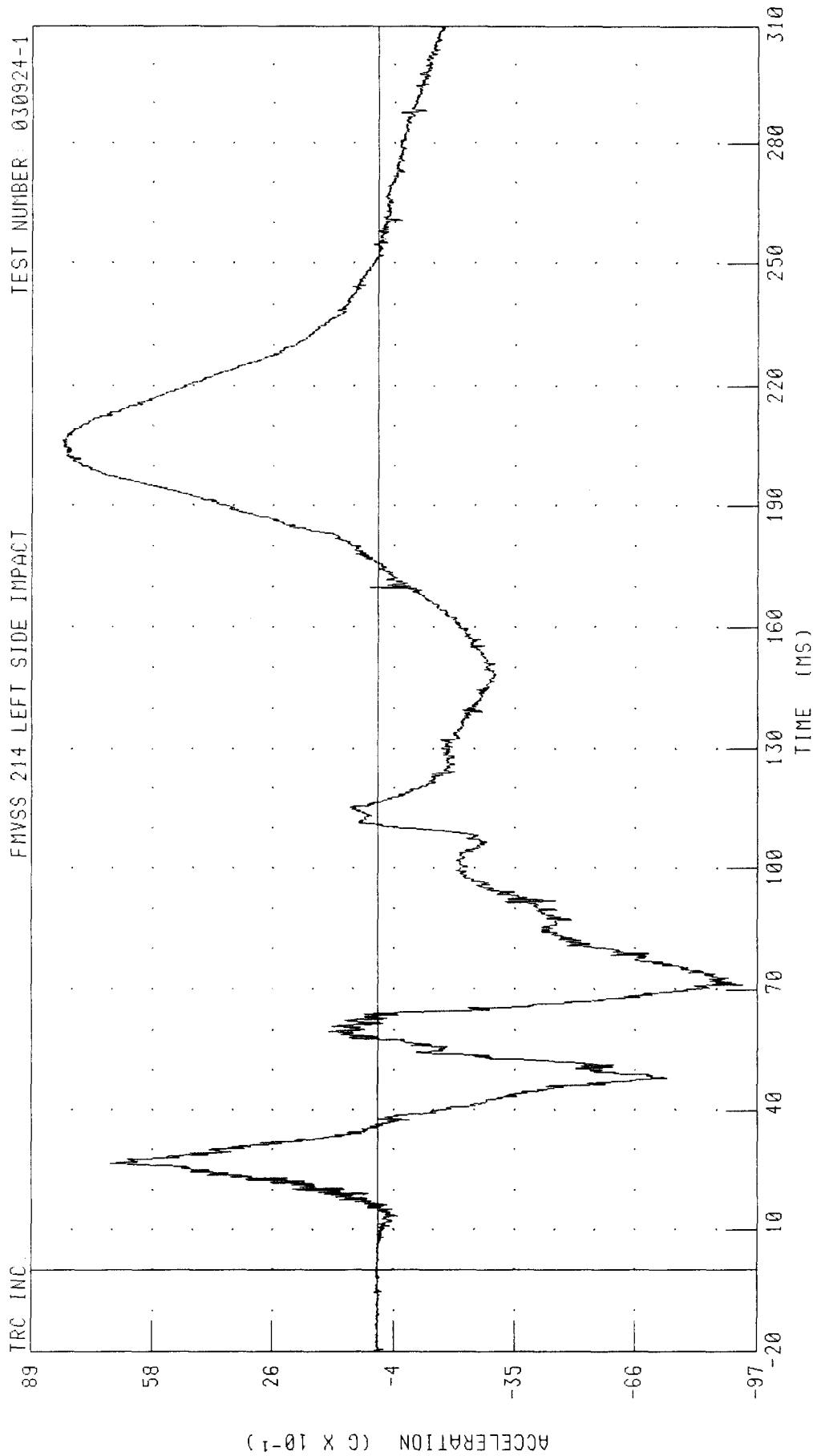
TEST NUMBER: 030924-1



CHANNEL: PEVET1 FILTER: CH. CLASS 1000

PEAK DATA 0 00 V @ 310 00 MS, -1 00 V @ 21 92 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
 LEFT REAR PASSENGER HEAD X-AXIS REDUNDANT ACCELERATION



PEAK DATA: 8.12 G @ 206.16 MS; -9.33 G @ 71.20 MS

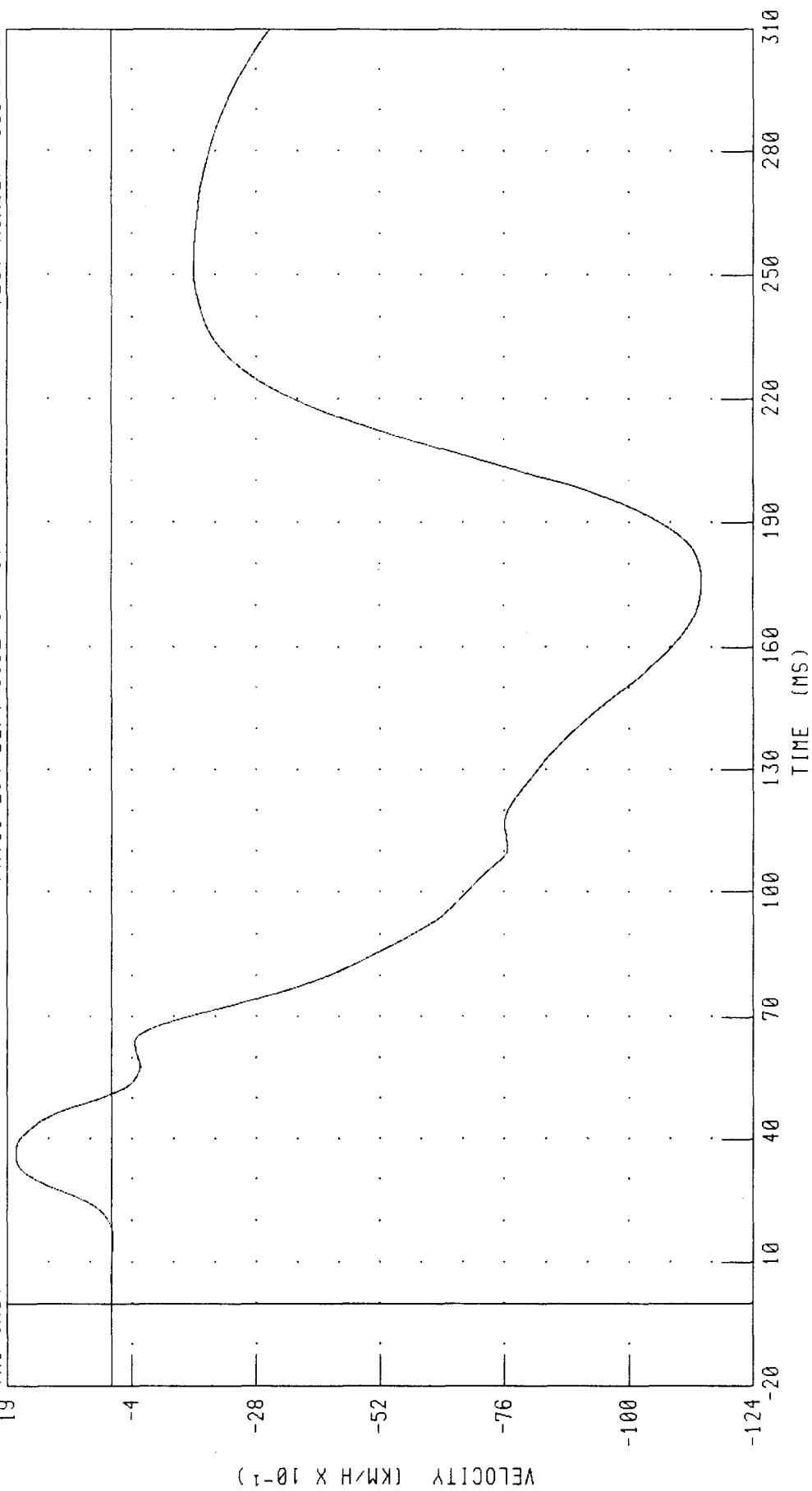
CHANNEL HEDXR4 FILTER: CH CLASS 1000

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
LEFT REAR PASSENGER HEAD X-AXIS REDUNDANT VELOCITY

TRC INC.

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030924-1



CHANNEL: HEDXVJ FILTER: CH CLASS 180

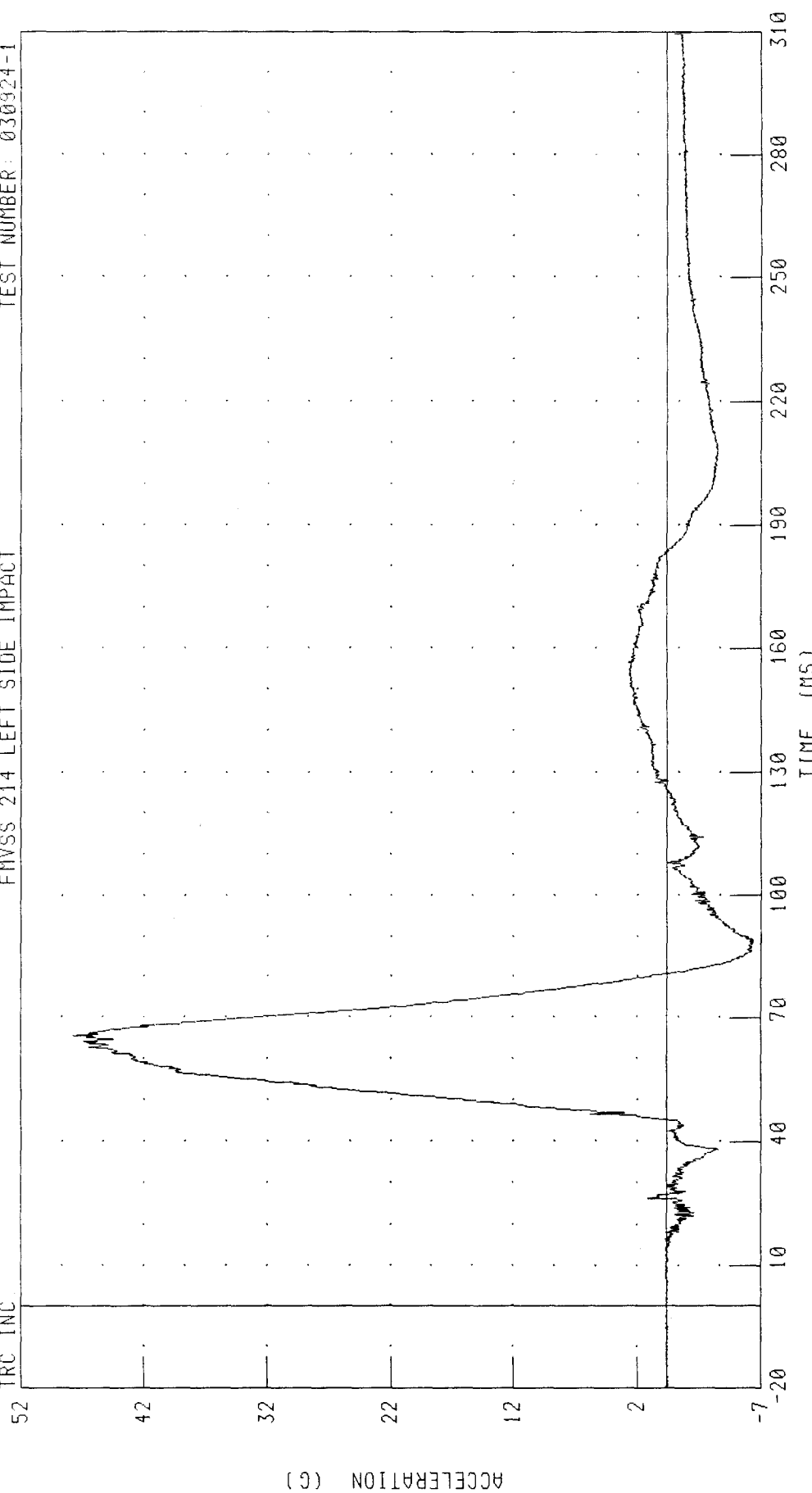
PEAK DATA: 1 83 KM/H @ 36 32 MS, -11 42 KM/H @ 175 92 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
LEFT REAR PASSENGER HEAD Y-AXIS REDUNDANT ACCELERATION

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

TRC INC



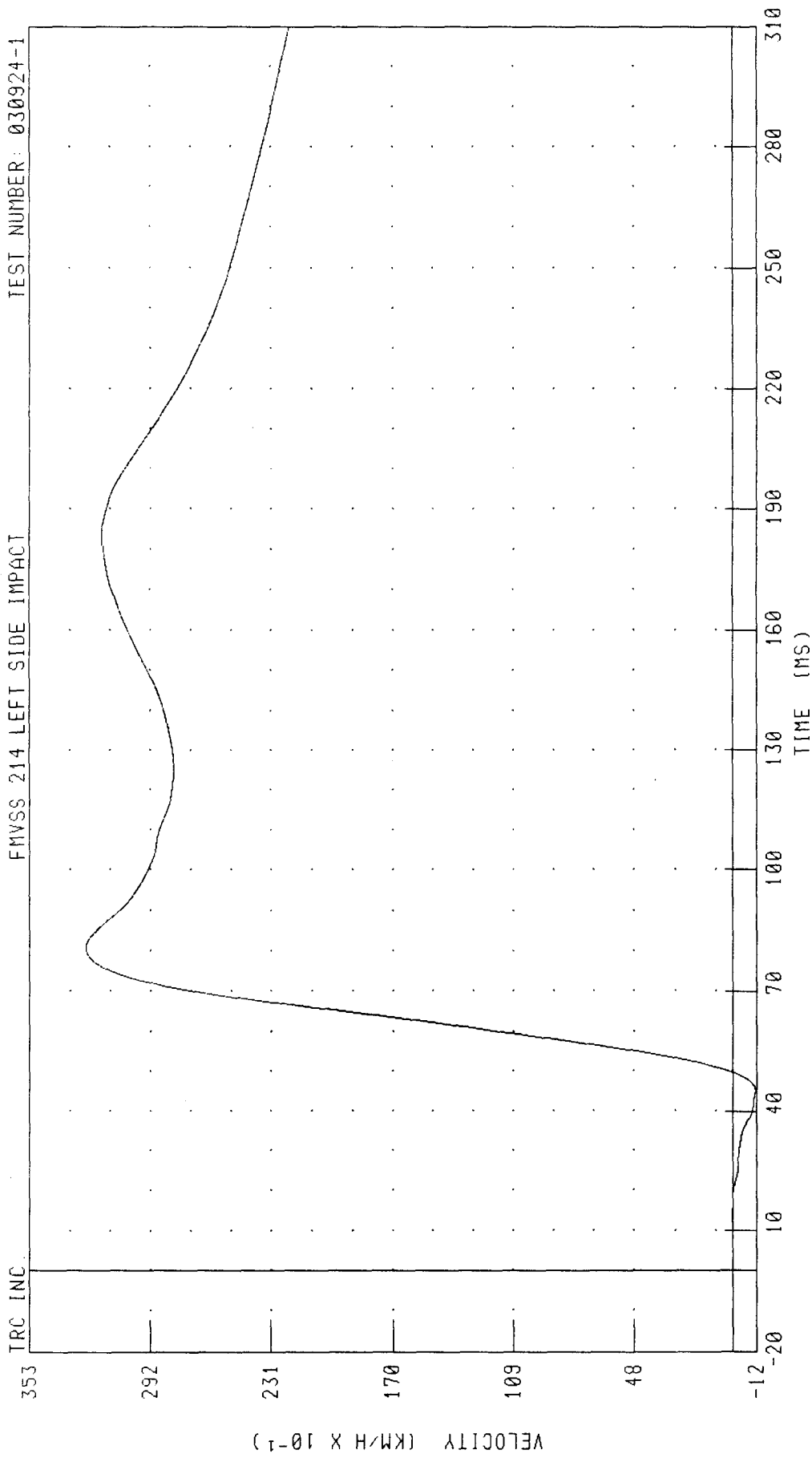
CHANNEL: HEDYR4 FILTER: CH. CLASS 1000

PEAK DATA: 48.21 G @ 65.68 MS, -6.95 G @ 88.16 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
 LEFT REAR PASSENGER HEAD Y-AXIS REDUNDANT VELOCITY

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT



CHANNEL: HEDYVJ FILTER: CH CLASS 180 PEAK DATA 32 58 KM/H @ 80.80 MS, -1 13 KM/H @ 45.12 MS

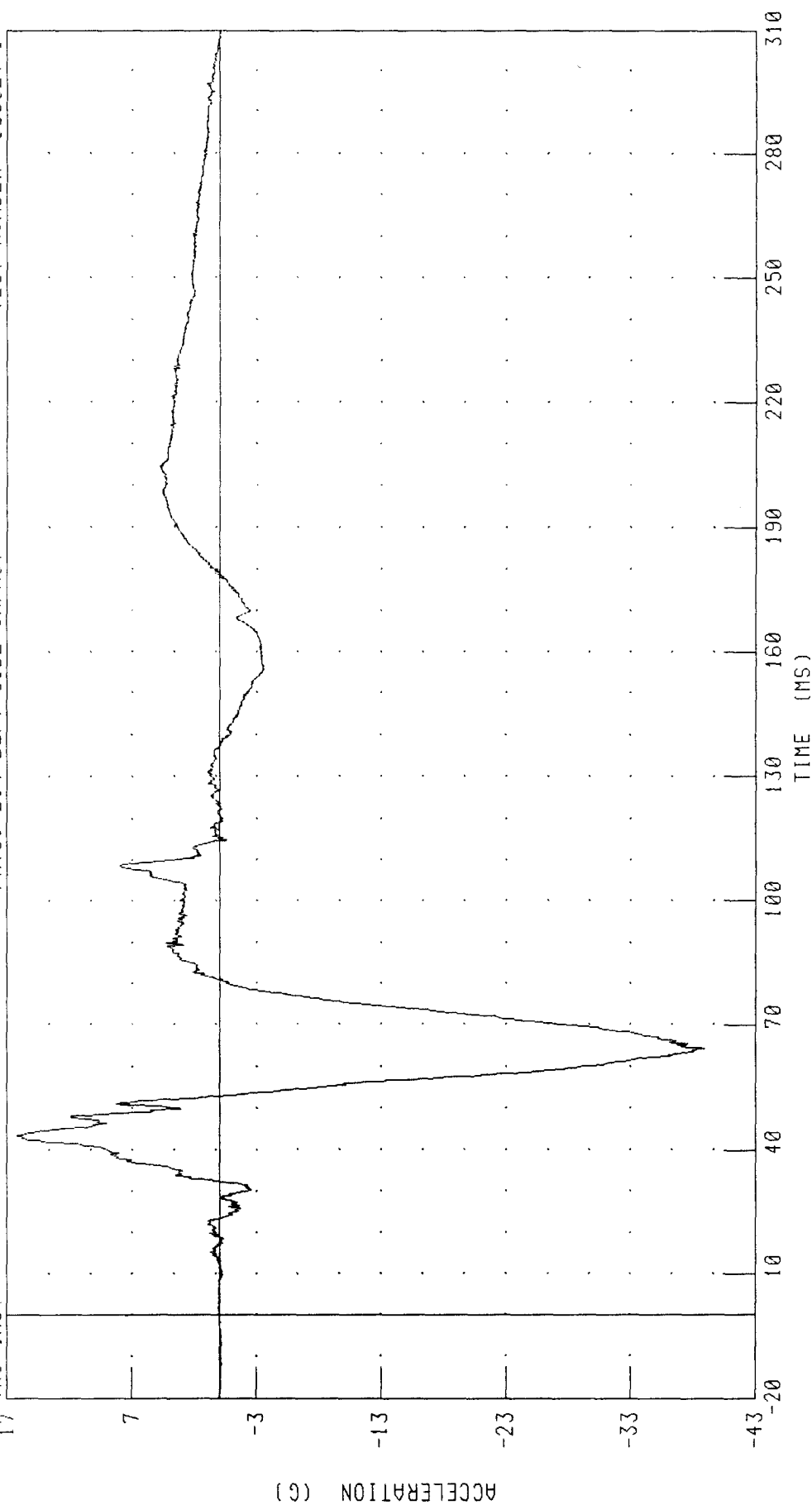
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

LEFT REAR PASSENGER HEAD Z-AXIS REDUNDANT ACCELERATION

IRC INC.

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030924-1



CHANNEL: HEDZR4 FILTER: CH. CLASS 1000

PEAK DATA: 16 17 G @ 43.60 MS; -38 91 G @ 64.40 MS

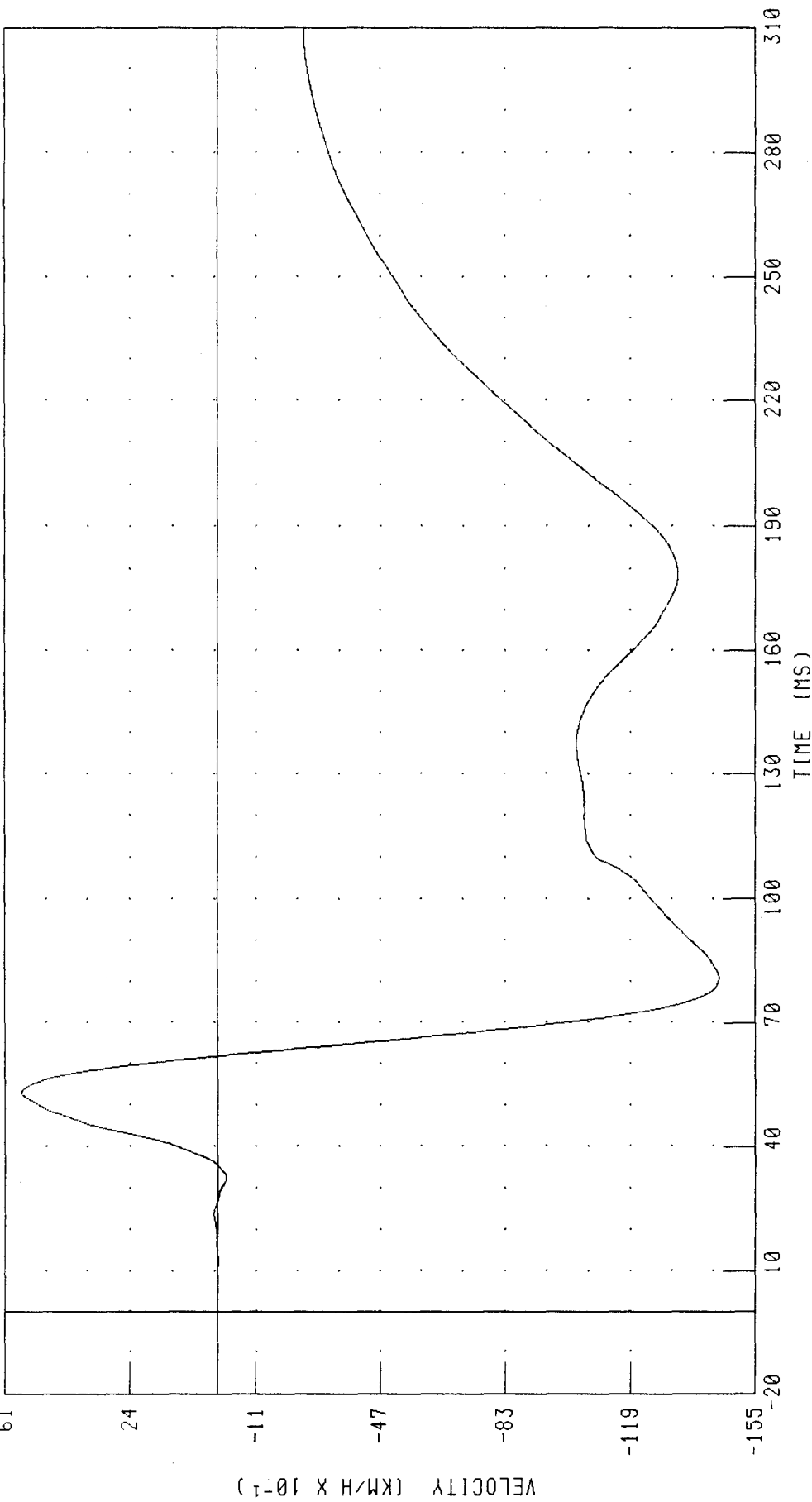
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

LEFT REAR PASSENGER HEAD Z-AXIS REDUNDANT VELOCITY

TRC INC.

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030924-1



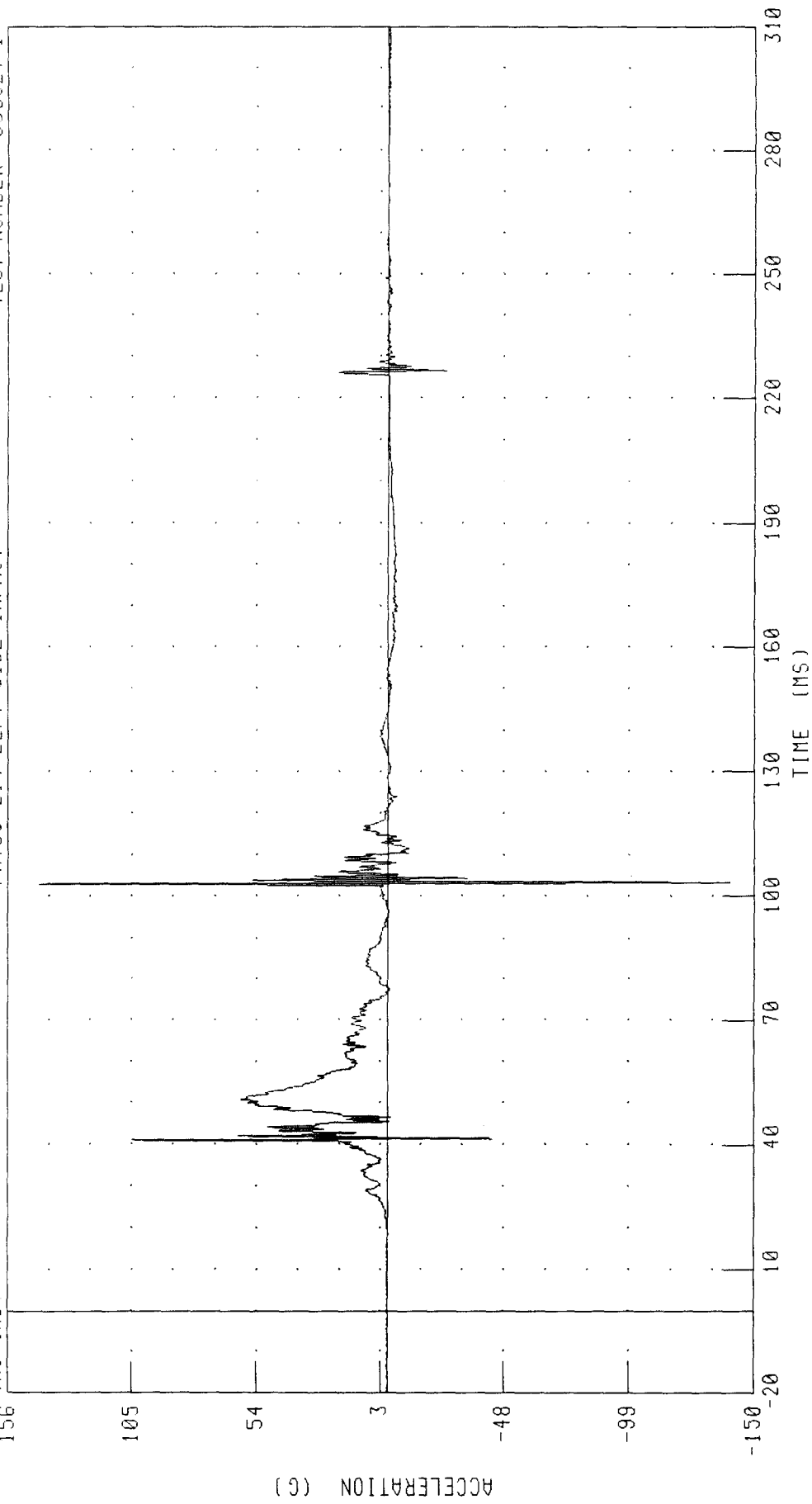
CHANNEL: HEDZVJ FILTER: CH. CLASS 180

PEAK DATA: 5 62 KM/H @ 52 96 MS, -14 46 KM/H @ 80 96 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
LEFT REAR PASSENGER UPPER RIB Y-AXIS REDUNDANT ACCELERATION

FMVSS 214 LEFT SIDE IMPACT TEST NUMBER: 030924-1

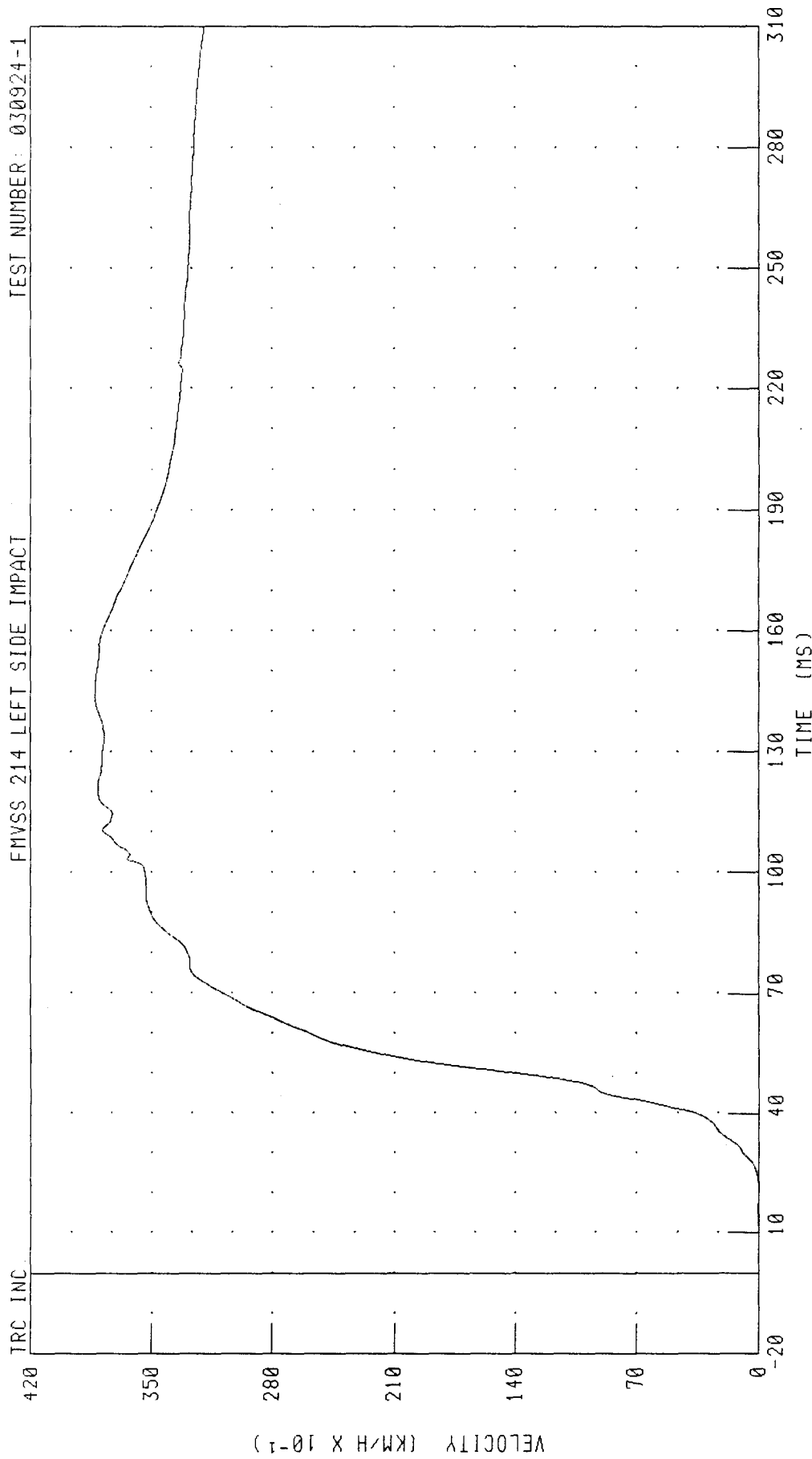
TRC INC



CHANNEL: LURYR4 FILTER: CH CLASS 1000

PEAK DATA: 143 25 G @ 102.96 MS, -140 07 G @ 103.44 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
LEFT REAR PASSENGER UPPER RIB Y-AXIS REDUNDANT VELOCITY

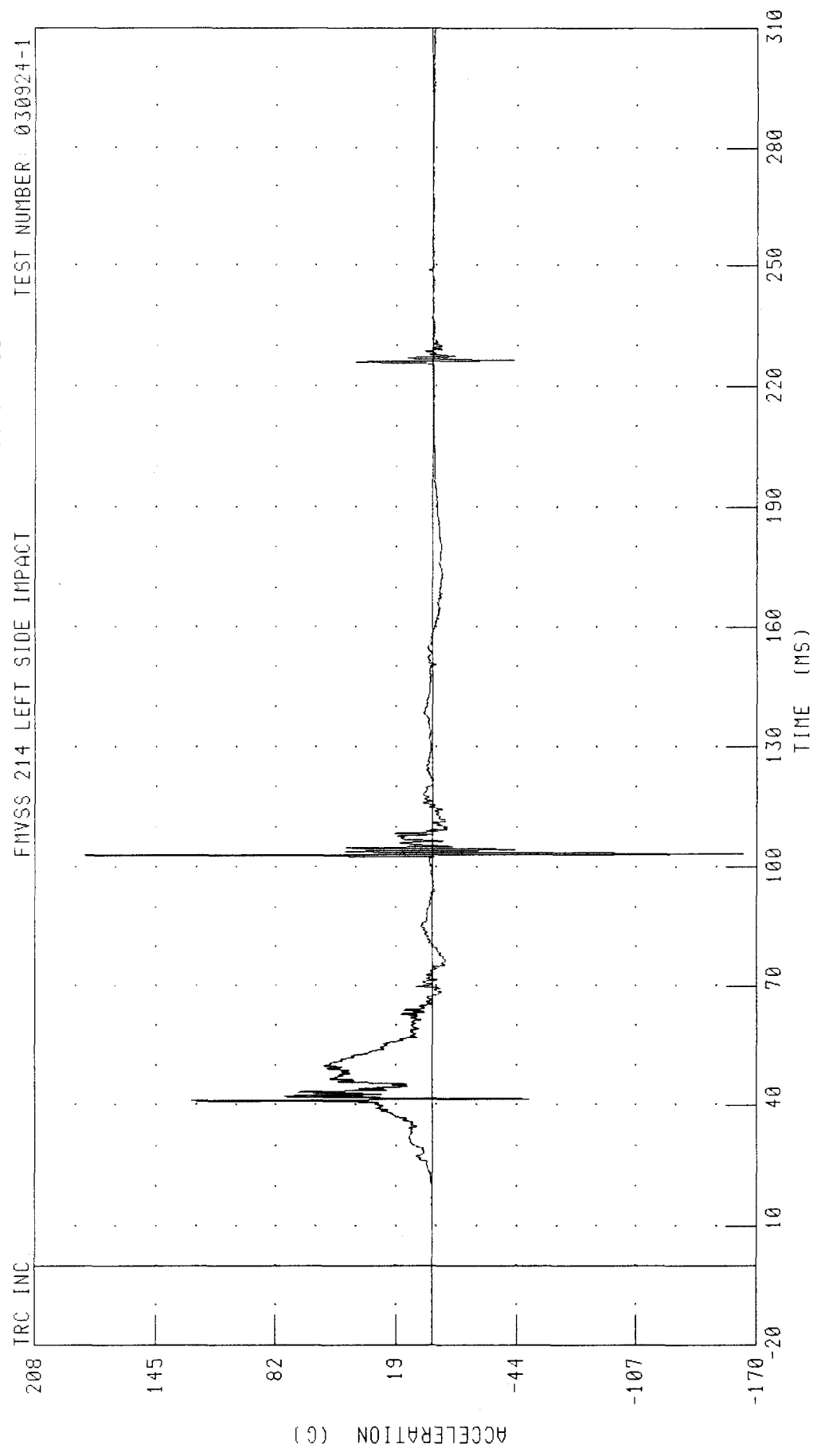


CHANNEL: LURYVJ FILTER: CH CLASS 180

PEAK DATA: 38 29 KM/H @ 144 72 MS, 0 00 KM/H @ 0 00 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

LEFT REAR PASSENGER LOWER RIB Y-AXIS REDUNDANT ACCELERATION



CHANNEL: LLRYR4 FILTER: CH CLASS 1000 PEAK DATA 182 76 G @ 103 04 MS, -162 98 G @ 103 44 MS

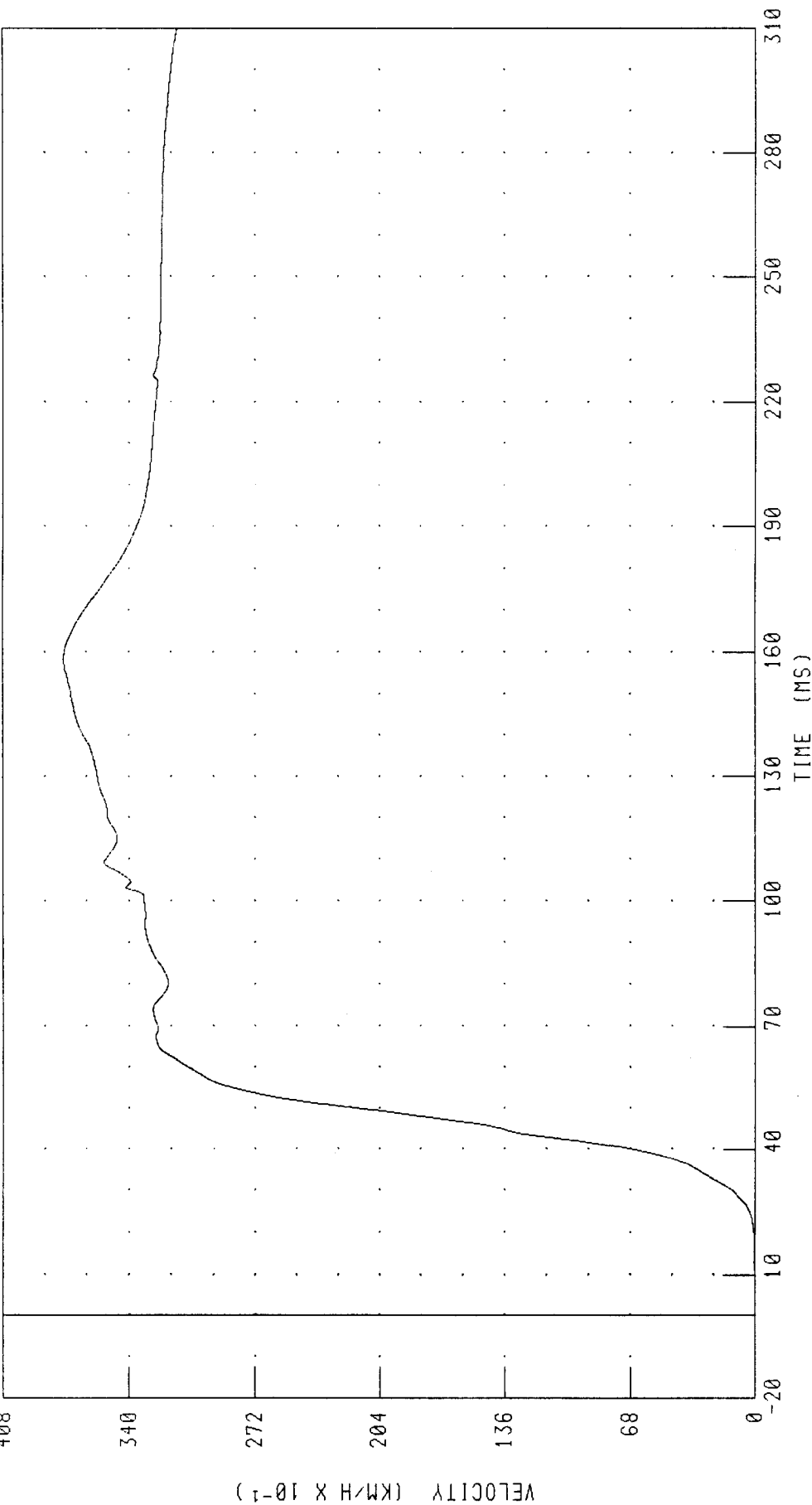
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

LEFT REAR PASSENGER LOWER RIB Y-AXIS REDUNDANT VELOCITY

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

TRC INC.



CHANNEL: LLRYVJ FILTER: CH CLASS 180

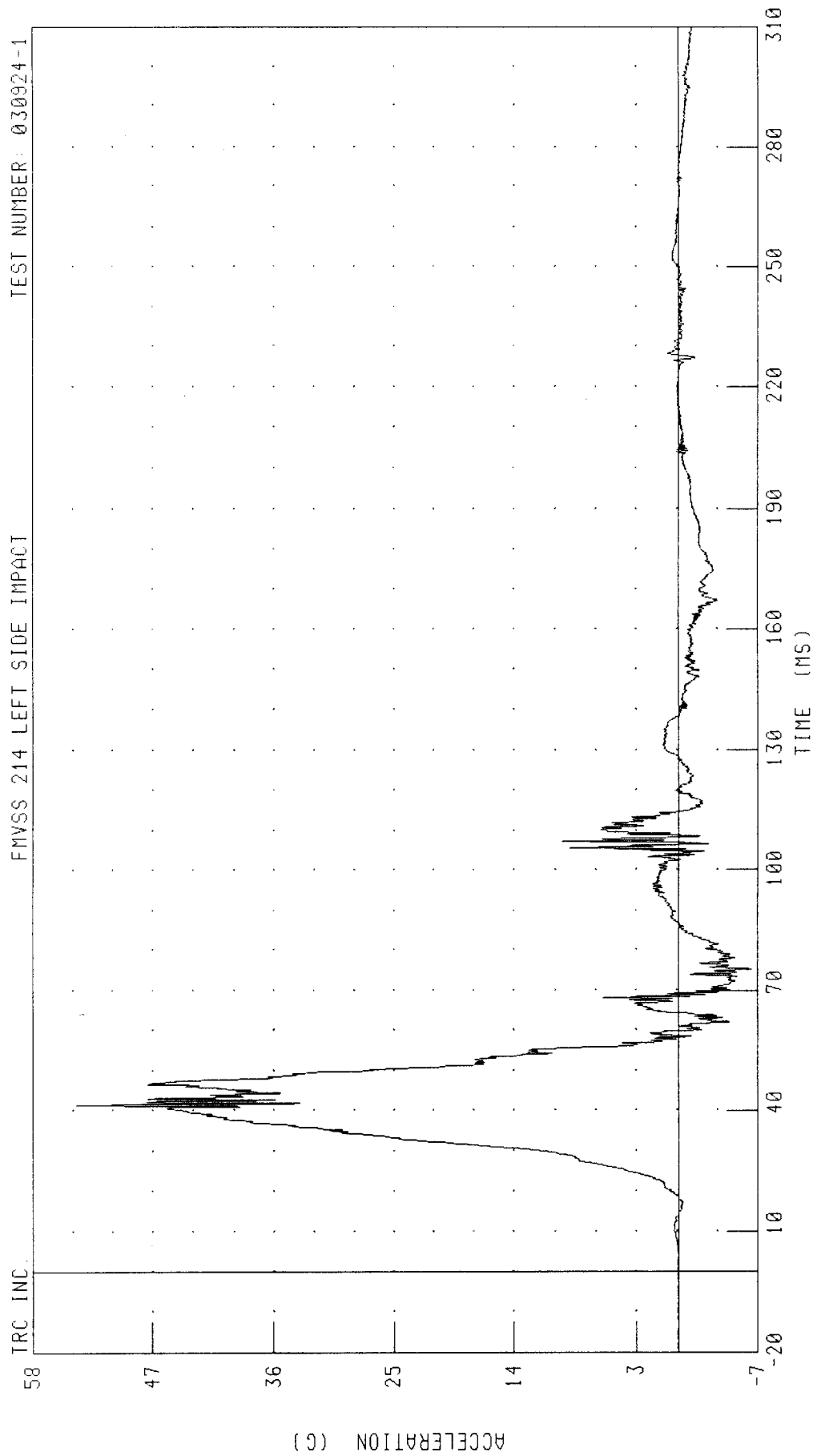
PEAK DATA: 37 51 KM/H @ 158 40 MS; 0 00 KM/H @ 0 00 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

LEFT REAR PASSENGER LOWER SPINE Y-AXIS REDUNDANT ACCELERATION

TEST NUMBER: 030924-1

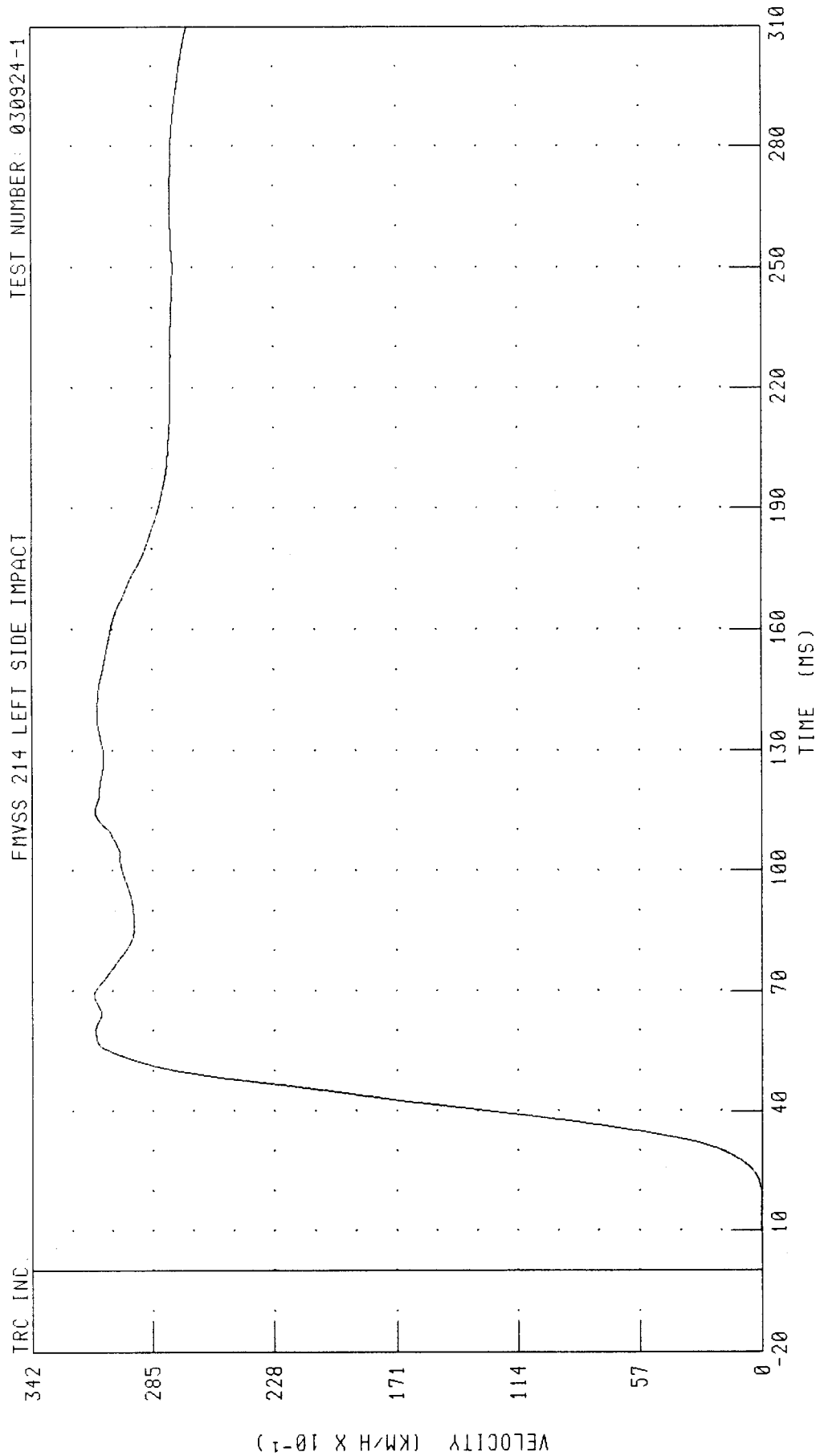
FMVSS 214 LEFT SIDE IMPACT



CHANNEL: T12YR4 FILTER: CH. CLASS 1000

PEAK DATA 54.83 G @ 41.44 MS, -6.63 G @ 75.28 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
 LEFT REAR PASSENGER LOWER SPINE Y-AXIS REDUNDANT VELOCITY

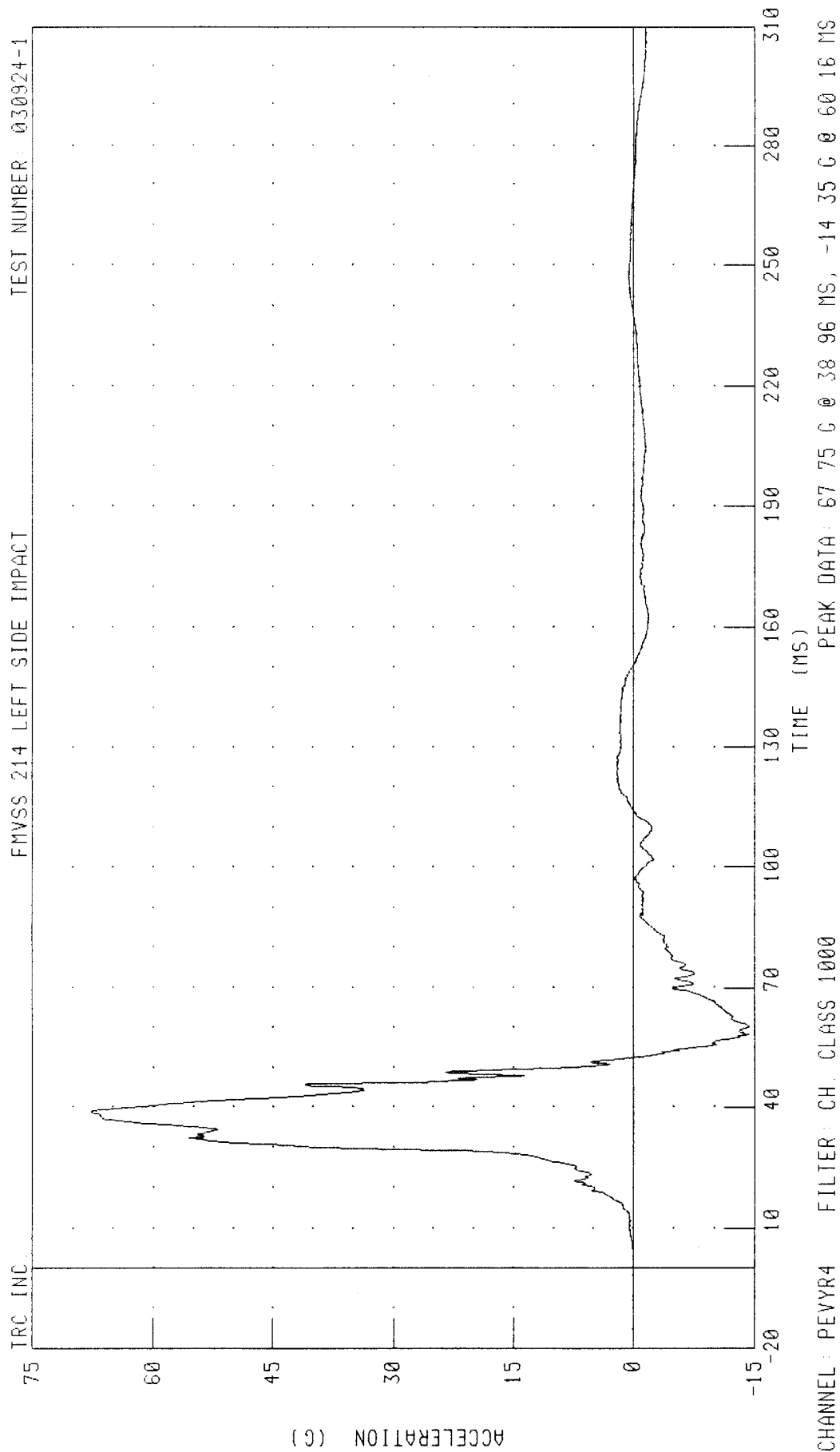


CHANNEL: T12YVJ FILTER: CH. CLASS 180

PEAK DATA: 31.29 KM/H @ 68.96 MS; 0 00 KM/H @ 0 00 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

LEFT REAR PASSENGER PELVIS Y-AXIS REDUNDANT ACCELERATION

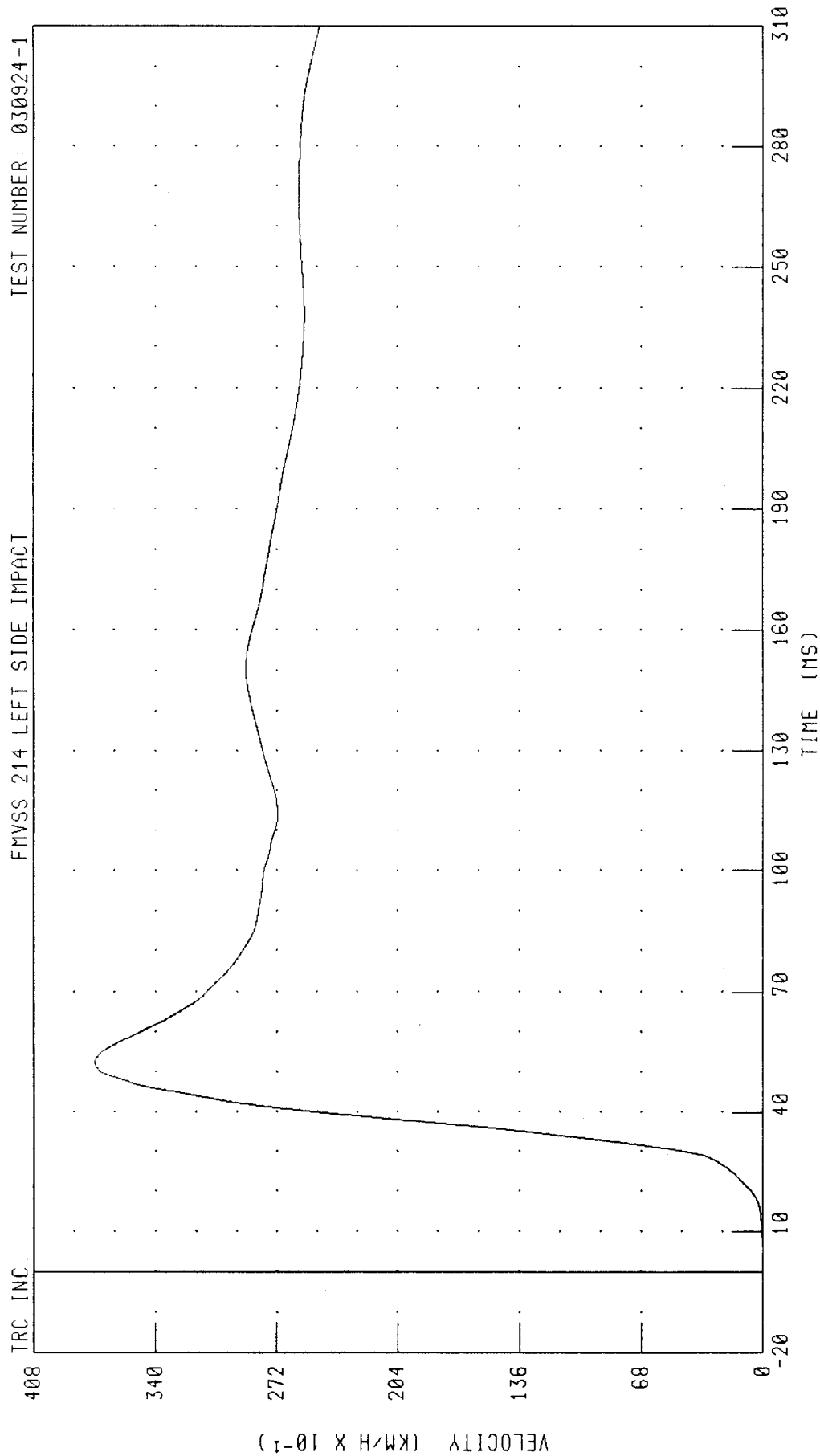


55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

LEFT REAR PASSENGER PELVIS Y-AXIS REDUNDANT VELOCITY

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT



CHANNEL: PEVYVJ FILTER: CH. CLASS 180

PEAK DATA: 37.35 KM/H @ 52.56 MS, 0.00 KM/H @ 0.00 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
LEFT REAR PASSENGER SHOULDER CONTACT SWITCH

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

TRC INC.

No Contact Recorded

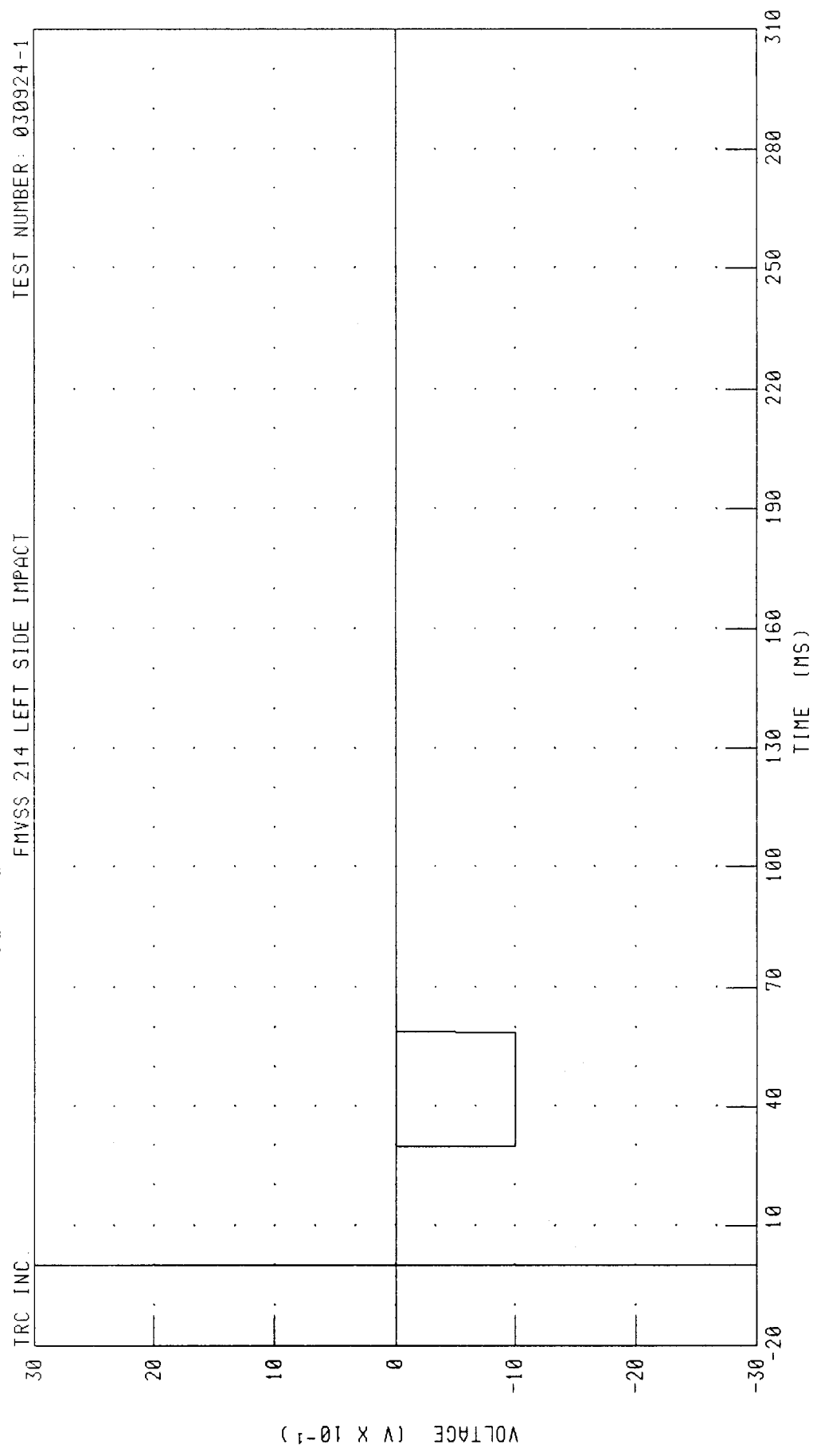
VOLTAGE (V X 10⁻¹)

TIME (MS)

CHANNEL: SHLE4 FILTER: CH CLASS 1000

PEAK DATA: 0 00 V @ 310 00 MS; 0 00 V @ -20 00 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
 LEFT REAR PASSENGER PELVIS CONTACT SWITCH



CHANNEL: PEVET4 FILTER: CH CLASS 1000 PEAK DATA: 0 00 V @ 310.00 MS, -1 00 V @ 29.76 MS

Test Vehicle Instrumentation Plots

Acceleration Data - Filter Class 60

Integration Data - Filter Class 180

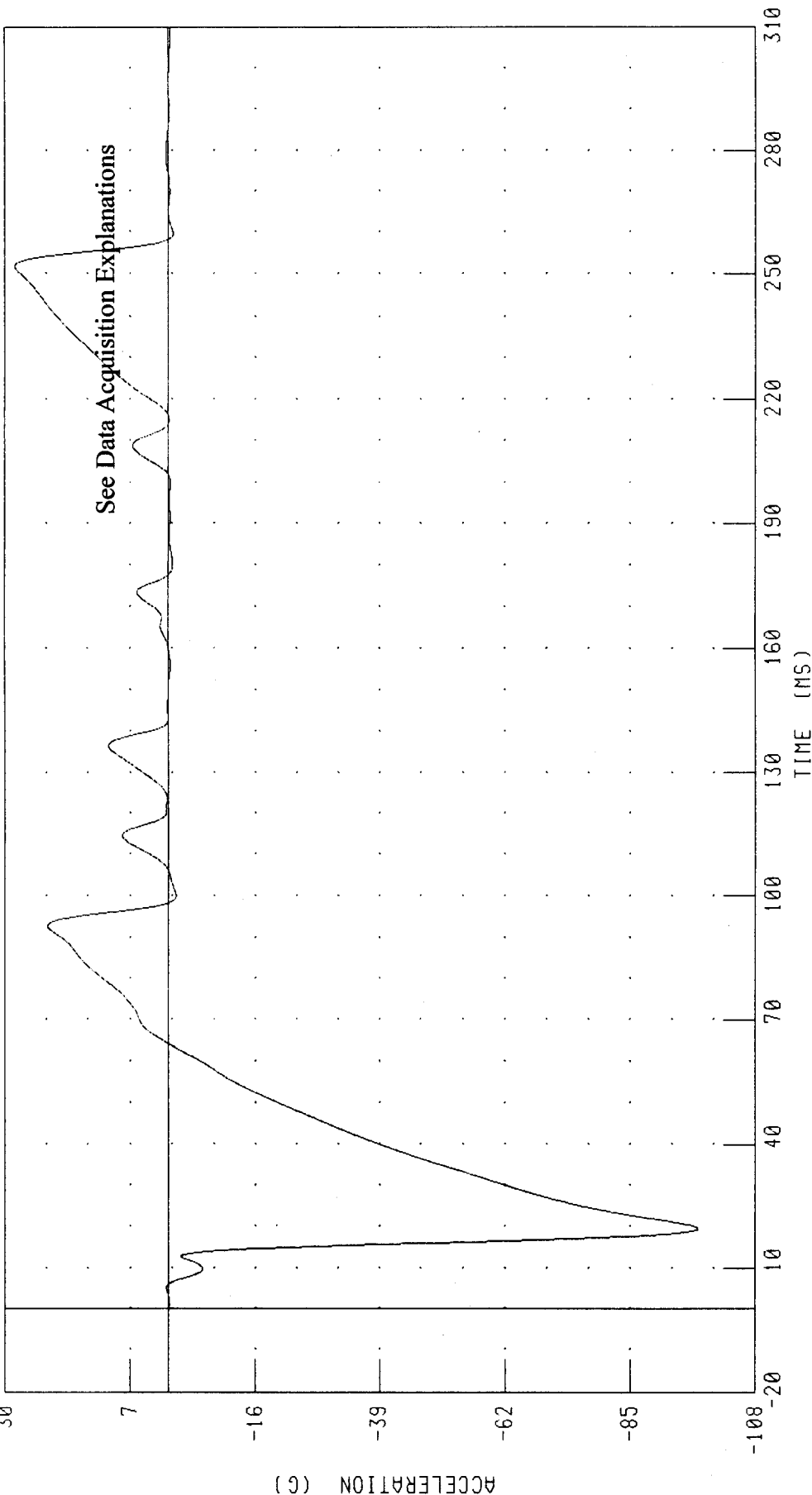
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

RIGHT SIDE SILL AT FRONT SEAT X-AXIS ACCELERATION

TRC INC.

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030924-1

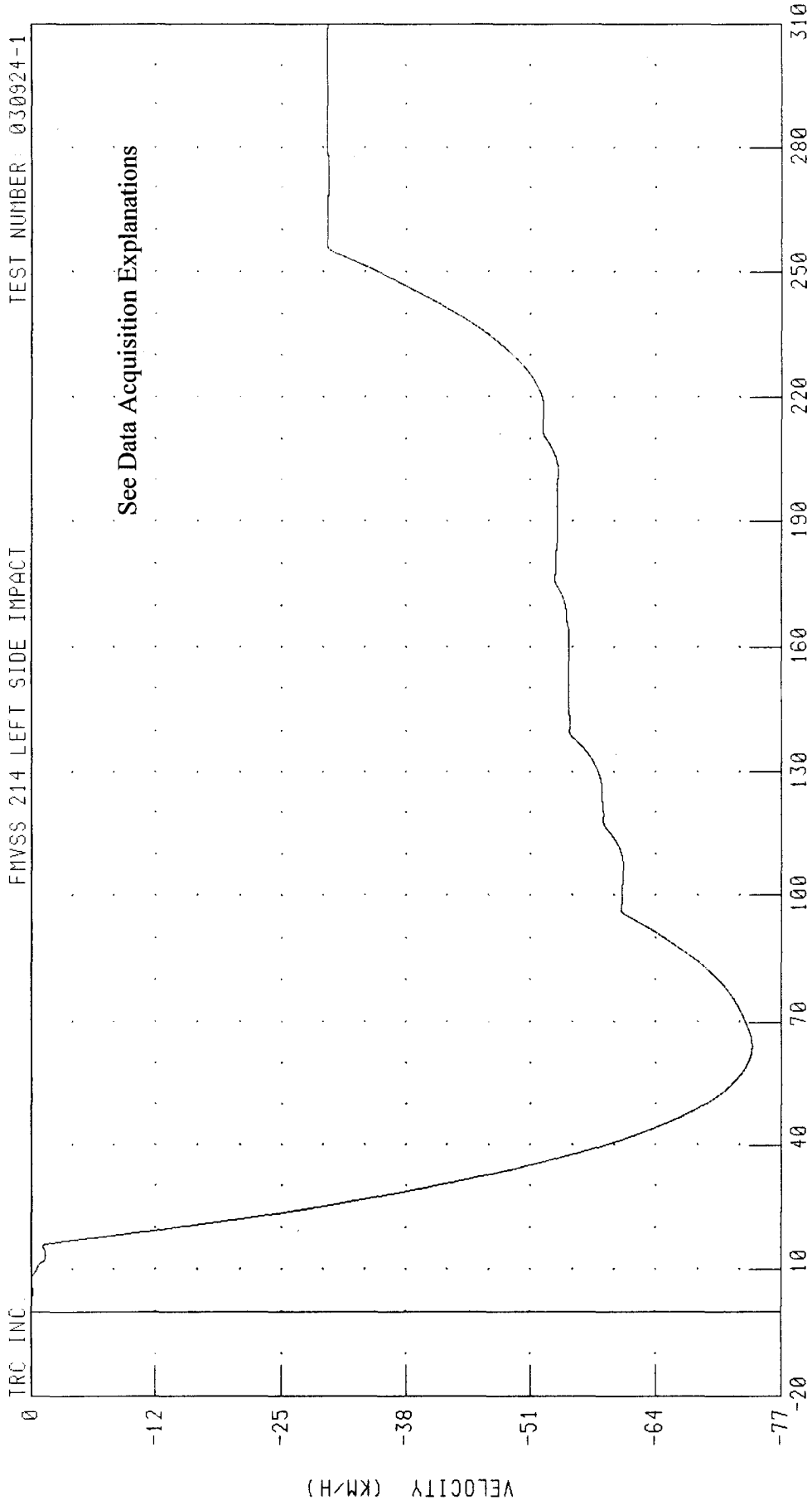


CHANNEL: RFSXG1 FILTER: CH CLASS 60

PEAK DATA: 28.15 G @ 251.76 MS, -97.57 G @ 19.44 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

RIGHT SIDE SILL AT FRONT SEAT X-AXIS VELOCITY



CHANNEL: RFSXV1 FILTER: CH. CLASS 180

PEAK DATA: 0.11 KM/H @ 7.28 MS, -74.89 KM/H @ 64.08 MS

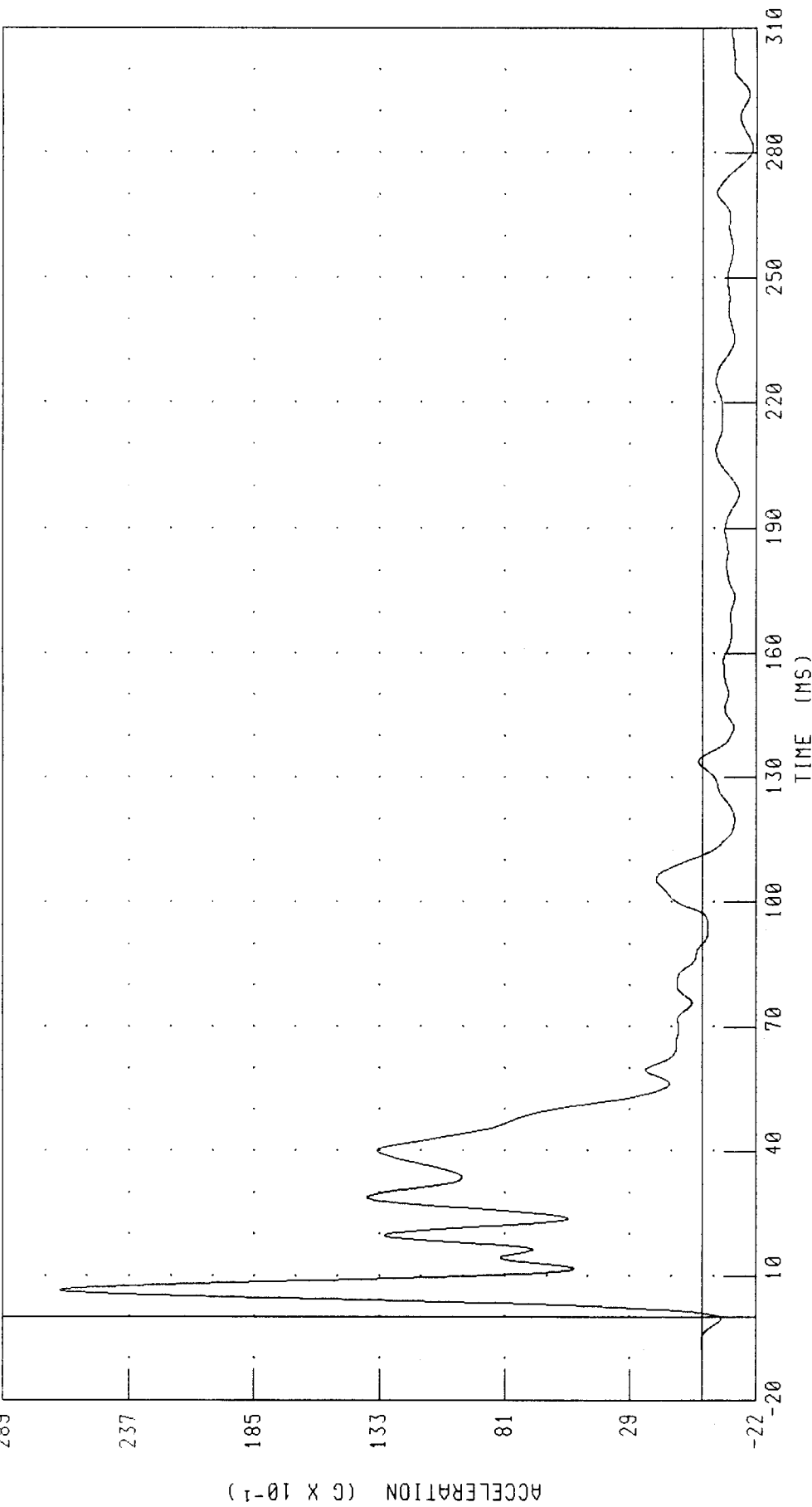
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

RIGHT SIDE SILL AT FRONT SEAT Y-AXIS ACCELERATION

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

TRC INC.

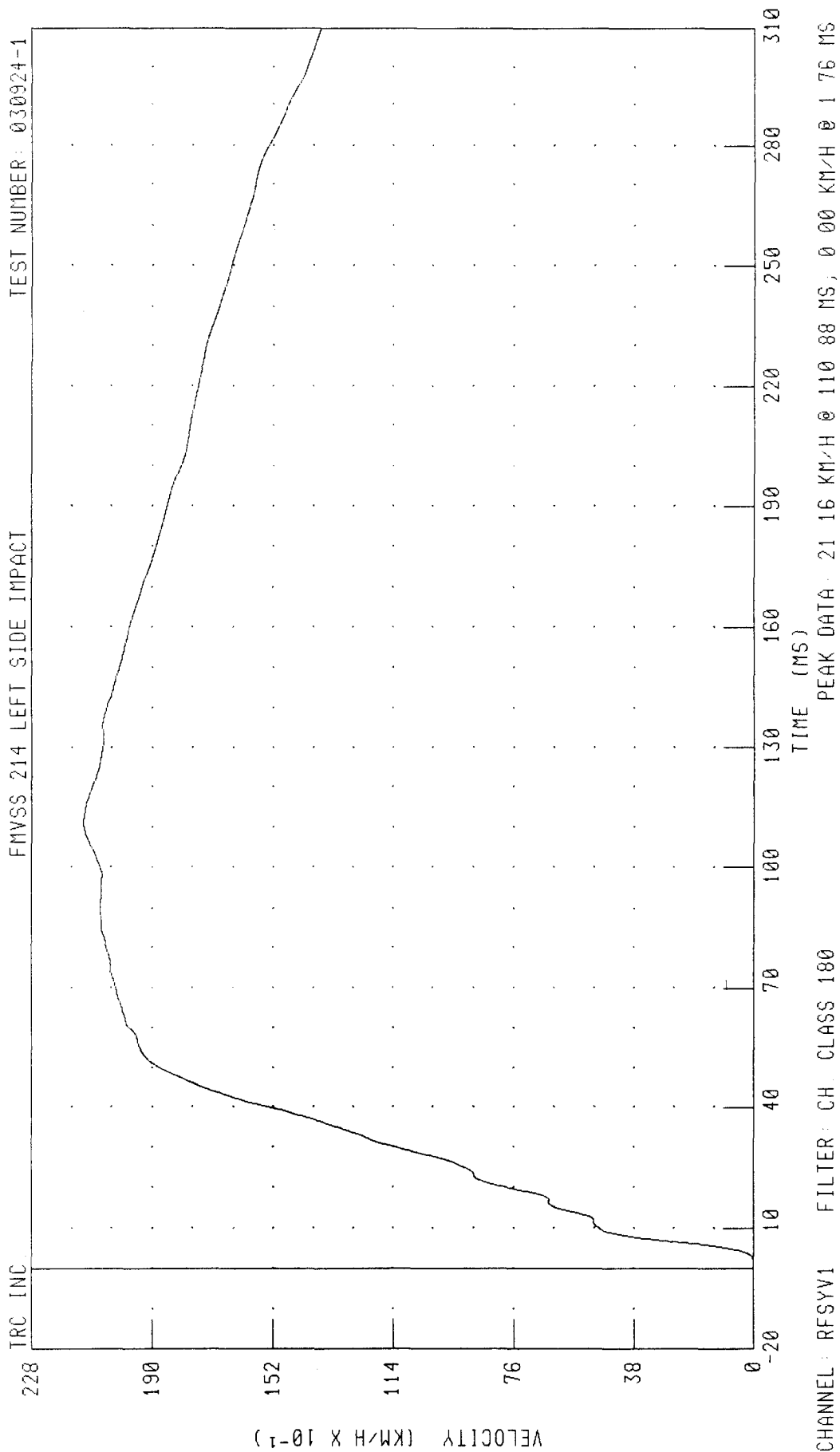


CHANNEL: RFSYG1 FILTER: CH CLASS 60

PEAK DATA 26 69 G @ 6 56 MS, -2 04 G @ 281 04 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

RIGHT SIDE SILL AT FRONT SEAT Y-AXIS VELOCITY



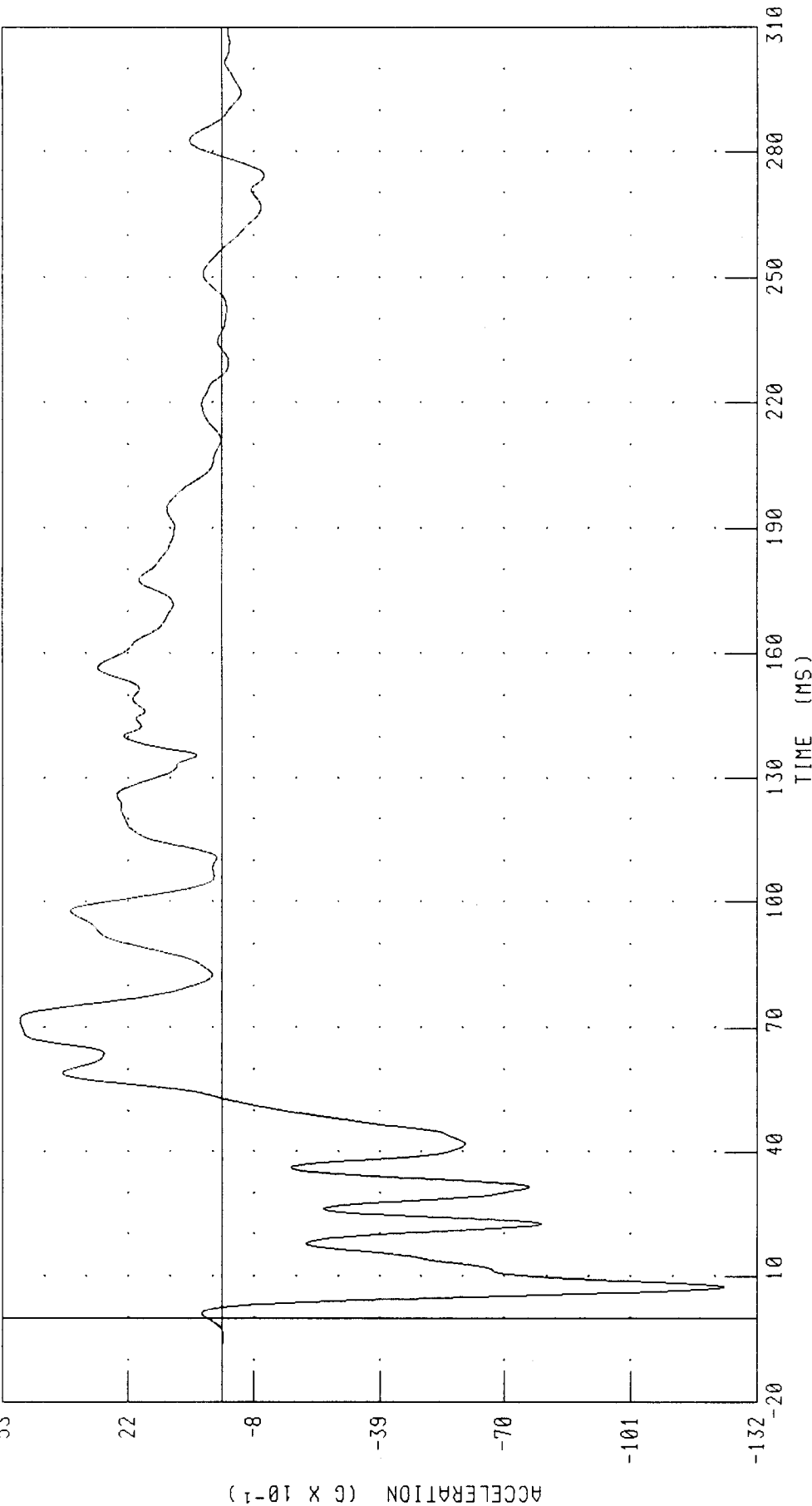
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

RIGHT SIDE SILL AT FRONT SEAT Z-AXIS ACCELERATION

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

TRC INC.

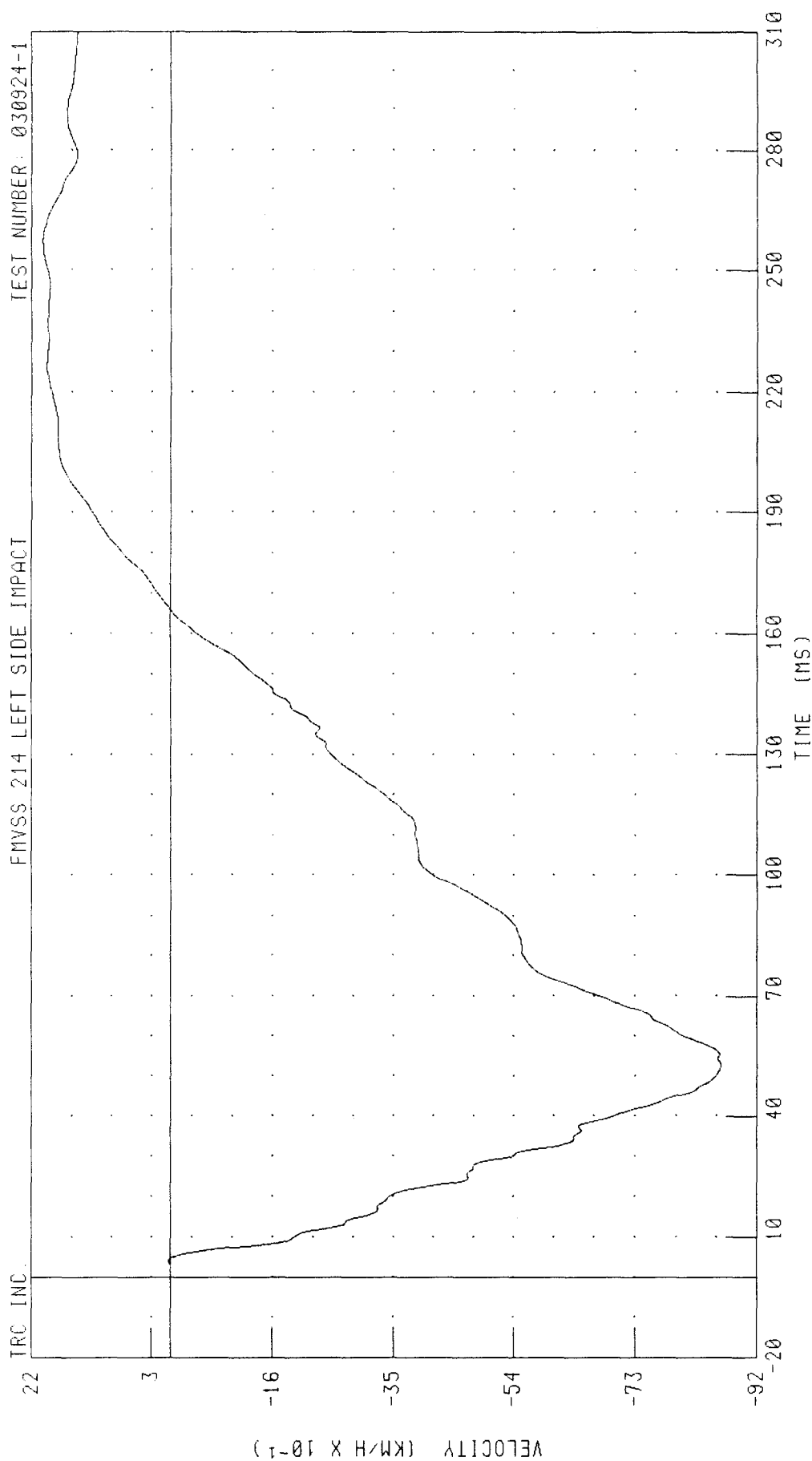


CHANNEL: RFSZG1 FILTER: CH CLASS 60

PEAK DATA: 4 95 G @ 72 08 MS, -12.40 G @ 7 52 MS

55/20 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

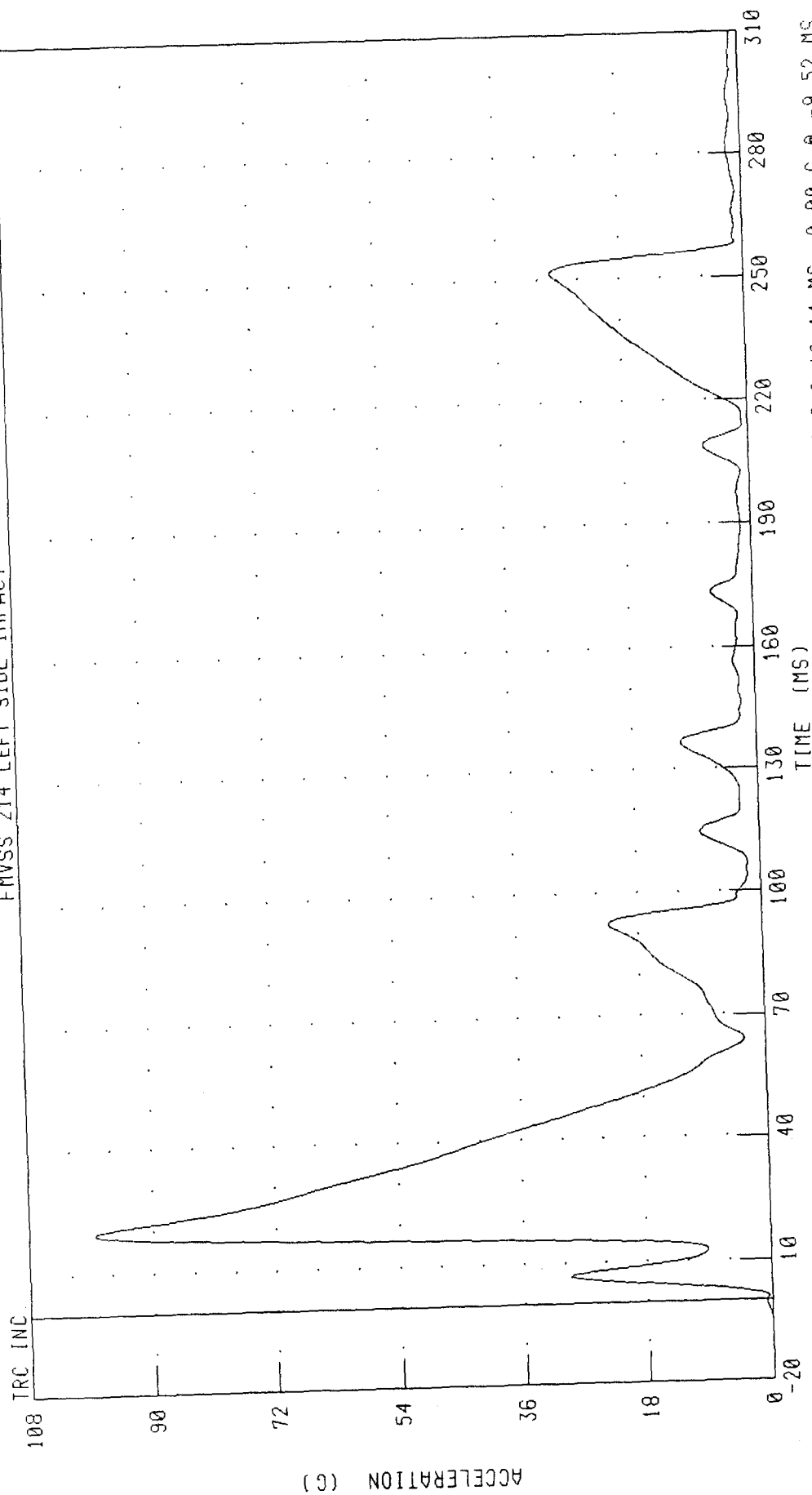
RIGHT SIDE SILL AT FRONT SEAT Z-AXIS VELOCITY



CHANNEL: RFSZV1 FILTER: CH. CLASS 180

PEAK DATA: 2 02 KM/H @ 257 12 MS, -8 64 KM/H @ 52.56 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
RIGHT SIDE SILL AT FRONT SEAT RESULTANT ACCELERATION
FMVSS 214 LEFT SIDE IMPACT
TEST NUMBER: 030924-1



PEAK DATA: 98.50 G @ 19.44 MS, 0.00 G @ -9.52 MS

CHANNEL: RFSRC1 FILTER: CH. CLASS 60

ACCELERATION (G)

TIME (MS)

TRC INC

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
RIGHT SIDE SILL AT REAR SEAT X-AXIS ACCELERATION

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

TRC INC.

41

23

5

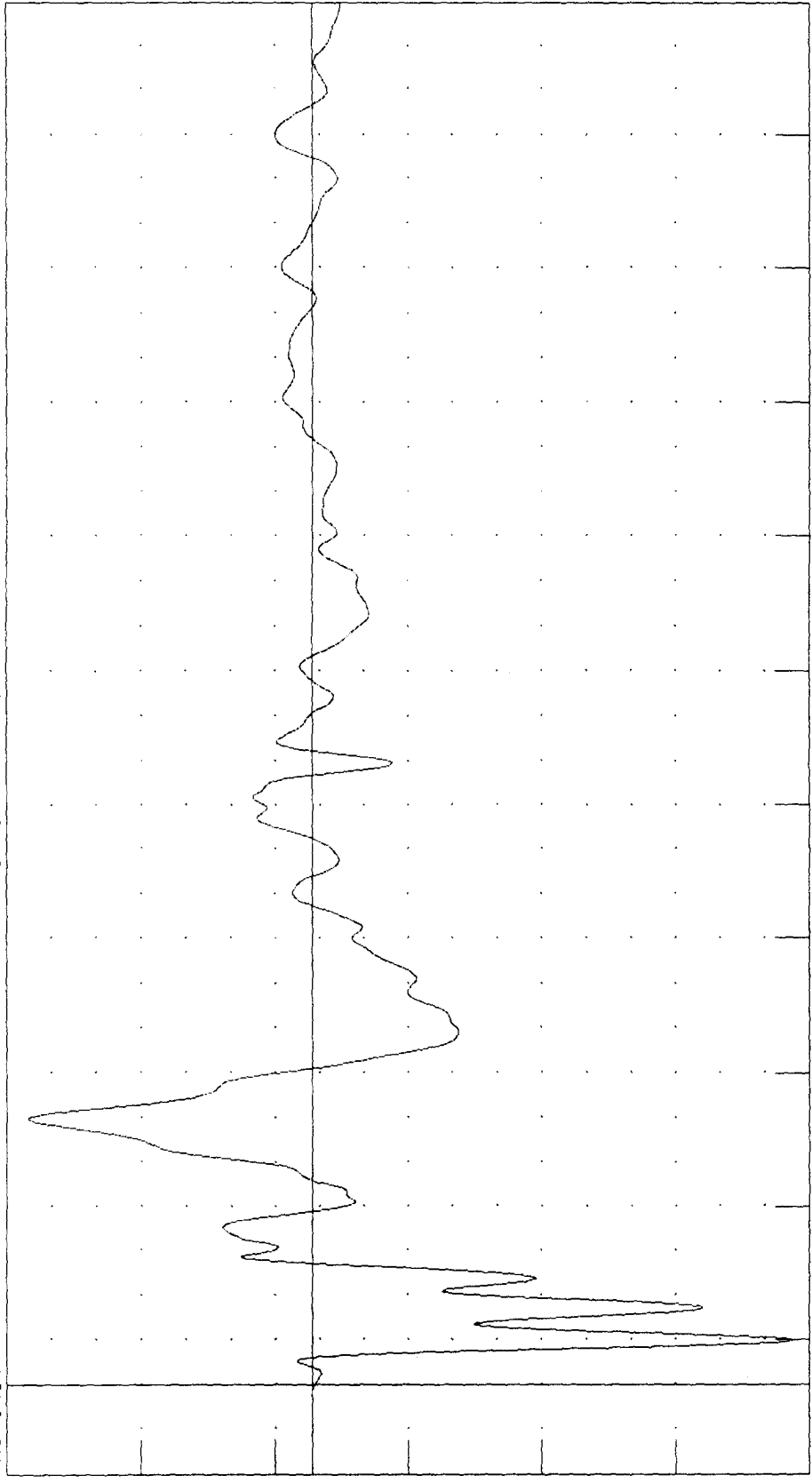
-13

-31

-49

-67

ACCELERATION ($G \times 10^{-1}$)



TIME (MS)

PEAK DATA: 3.82 G @ 59.76 MS, -6.47 G @ 9.76 MS

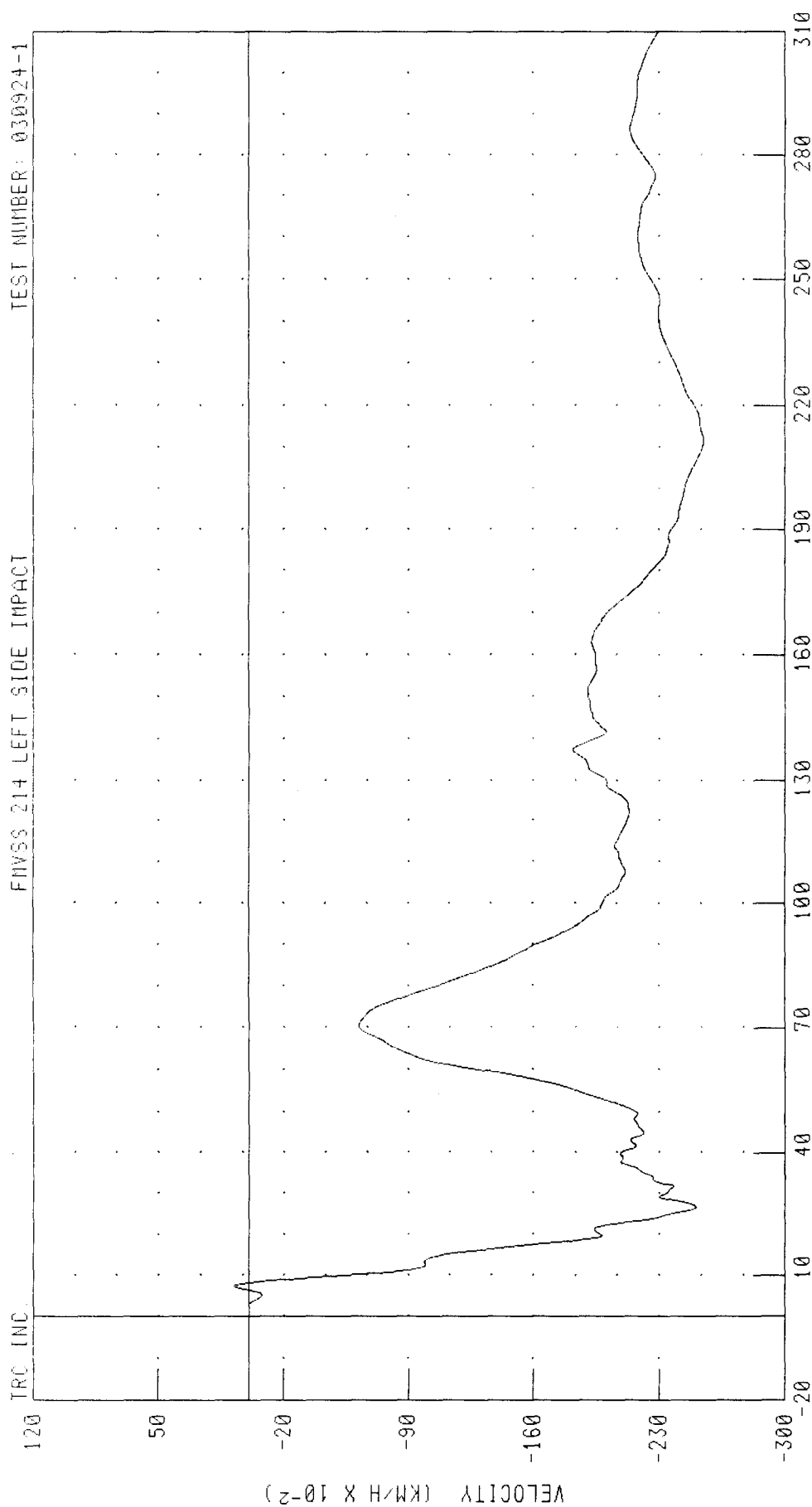
CHANNEL: RRSXG1 FILTER: CH CLASS 60

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

RIGHT SIDE SILL AT REAR SEAT X-AXIS VELOCITY

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT



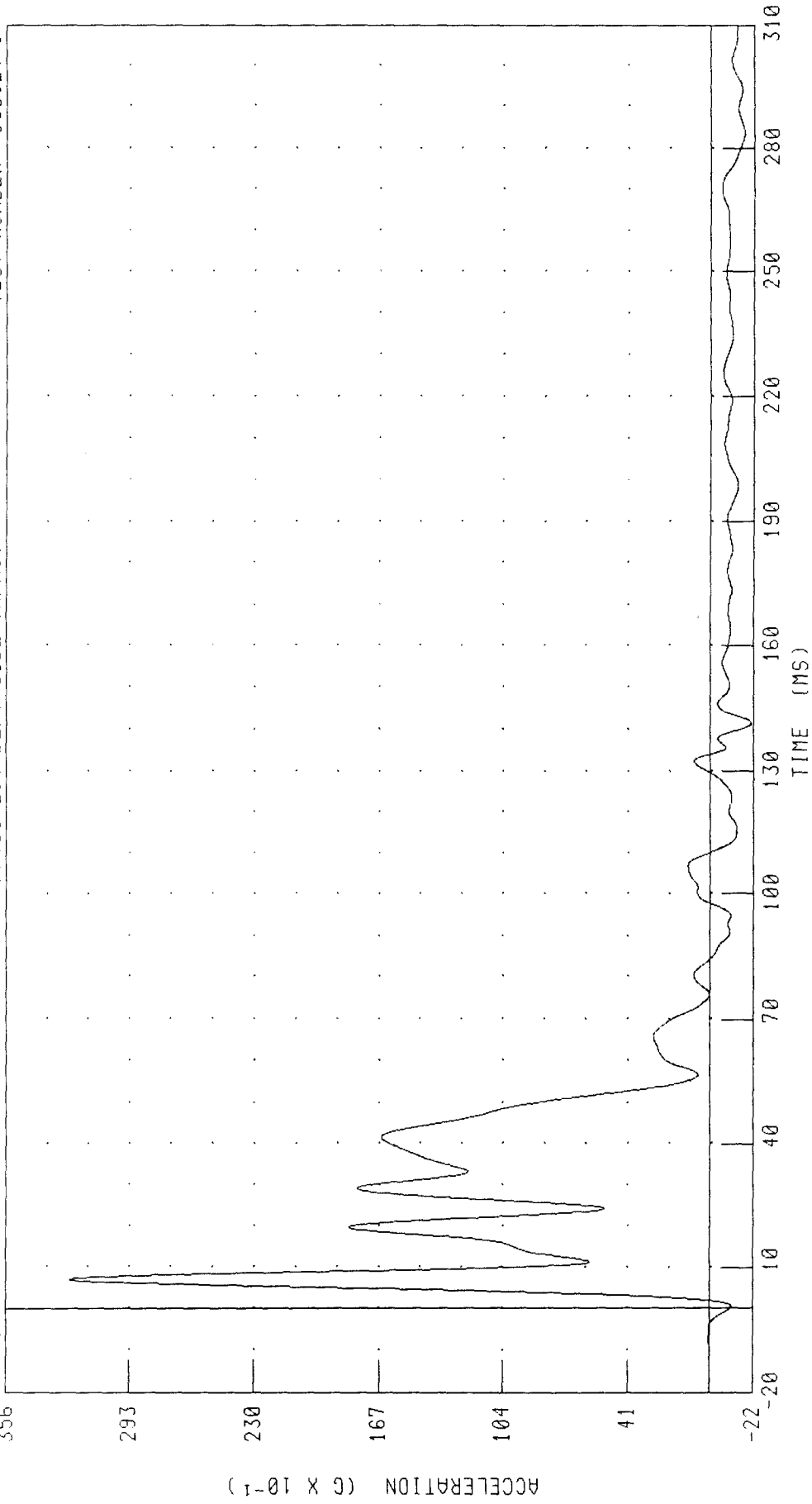
TIME (MS)

CHANNEL: RRSXV1 FILTER: CH. CLASS 180

PEAK DATA: 0 08 KM/H @ 7 44 MS, -2 54 KM/H @ 211 92 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
RIGHT SIDE SILL AT REAR SEAT Y-AXIS ACCELERATION

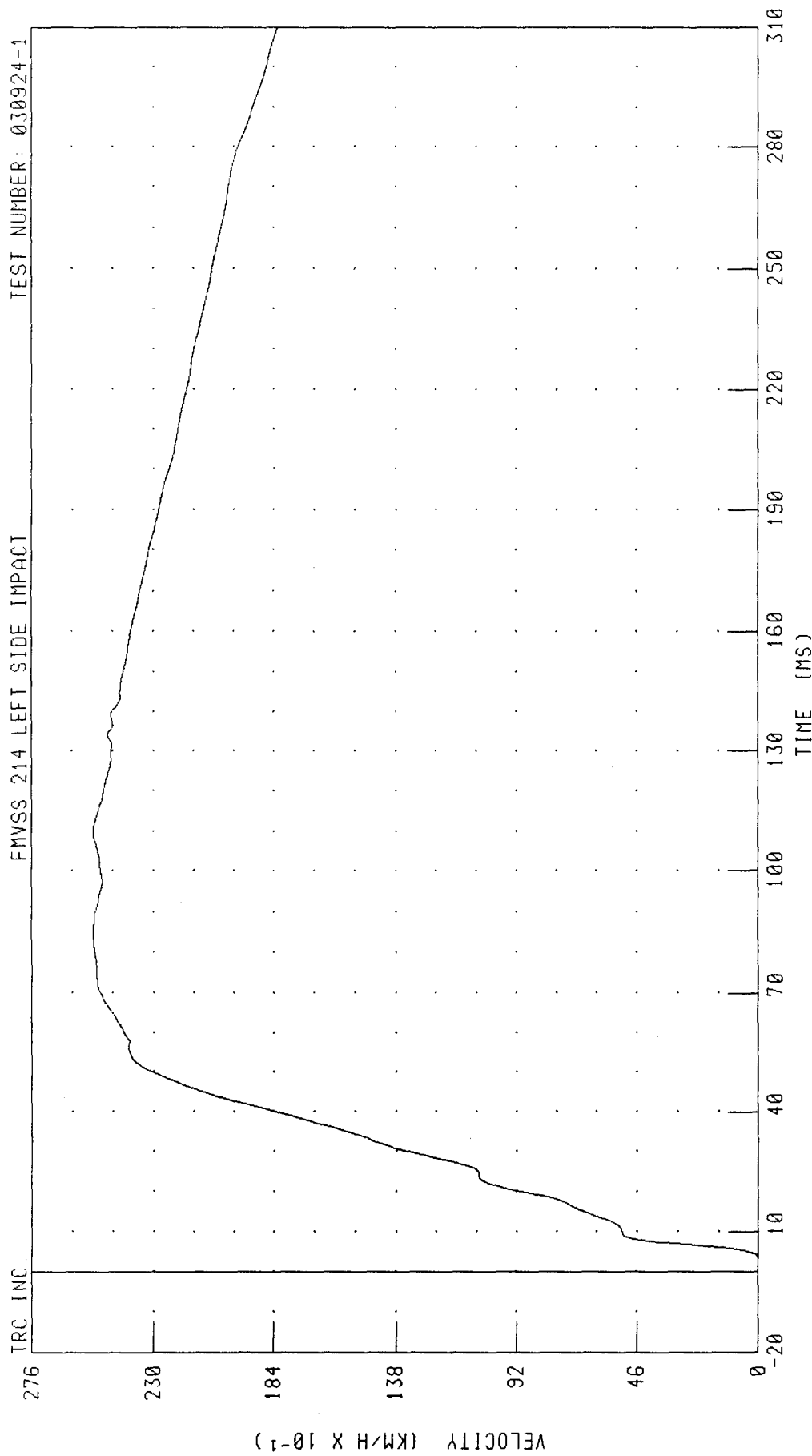
TRC INC. FMVSS 214 LEFT SIDE IMPACT TEST NUMBER: 030924-1



CHANNEL: RRSYG1 FILTER: CH CLASS 60

PEAK DATA: 32 38 G @ 6 80 MS; -2 08 G @ 141 36 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
 RIGHT SIDE SILL AT REAR SEAT Y-AXIS VELOCITY

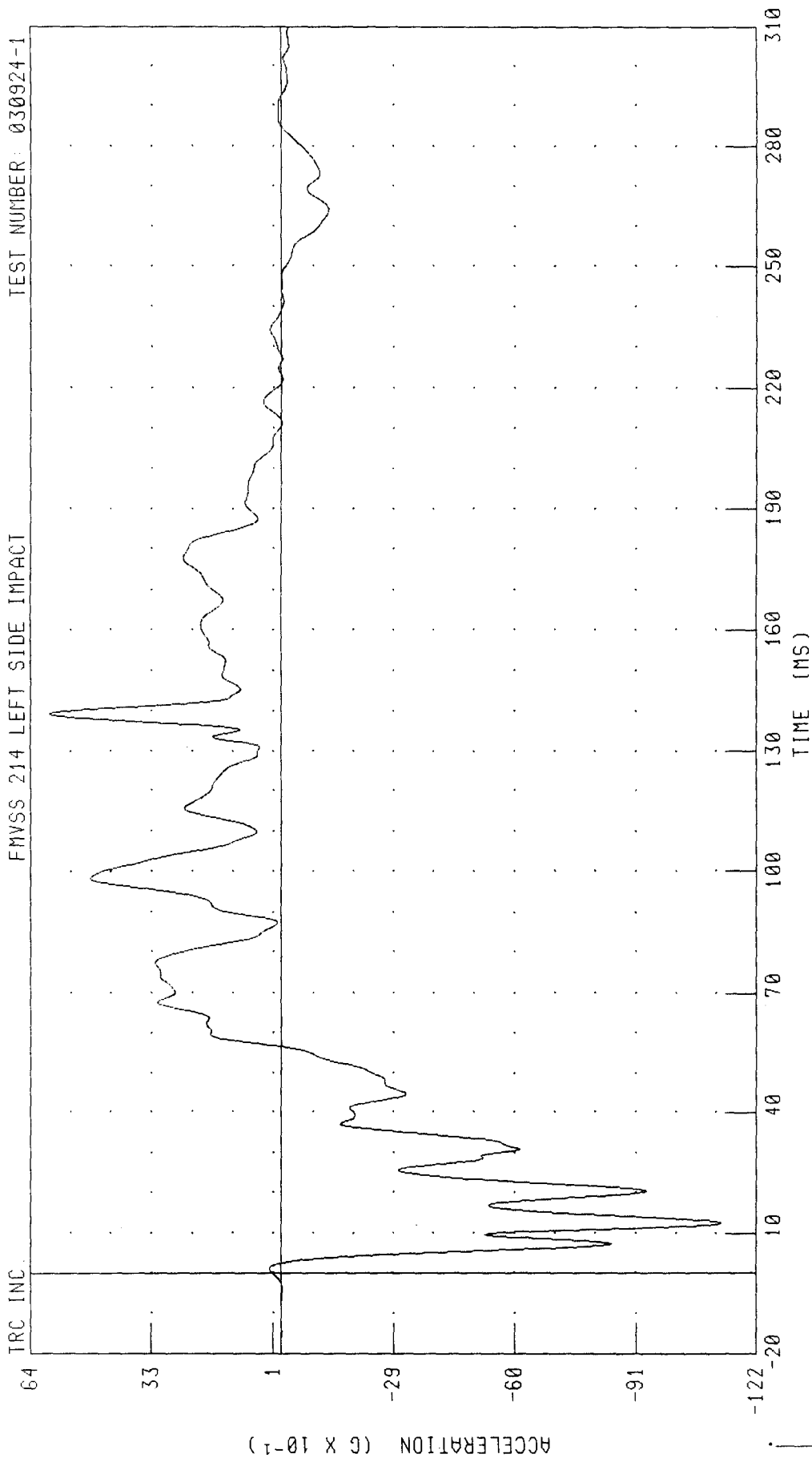


CHANNEL: RRSYV1 FILTER: CH. CLASS 180

PEAK DATA: 25 29 KM/H @ 82 88 MS, 0.00 KM/H @ 0 00 MS

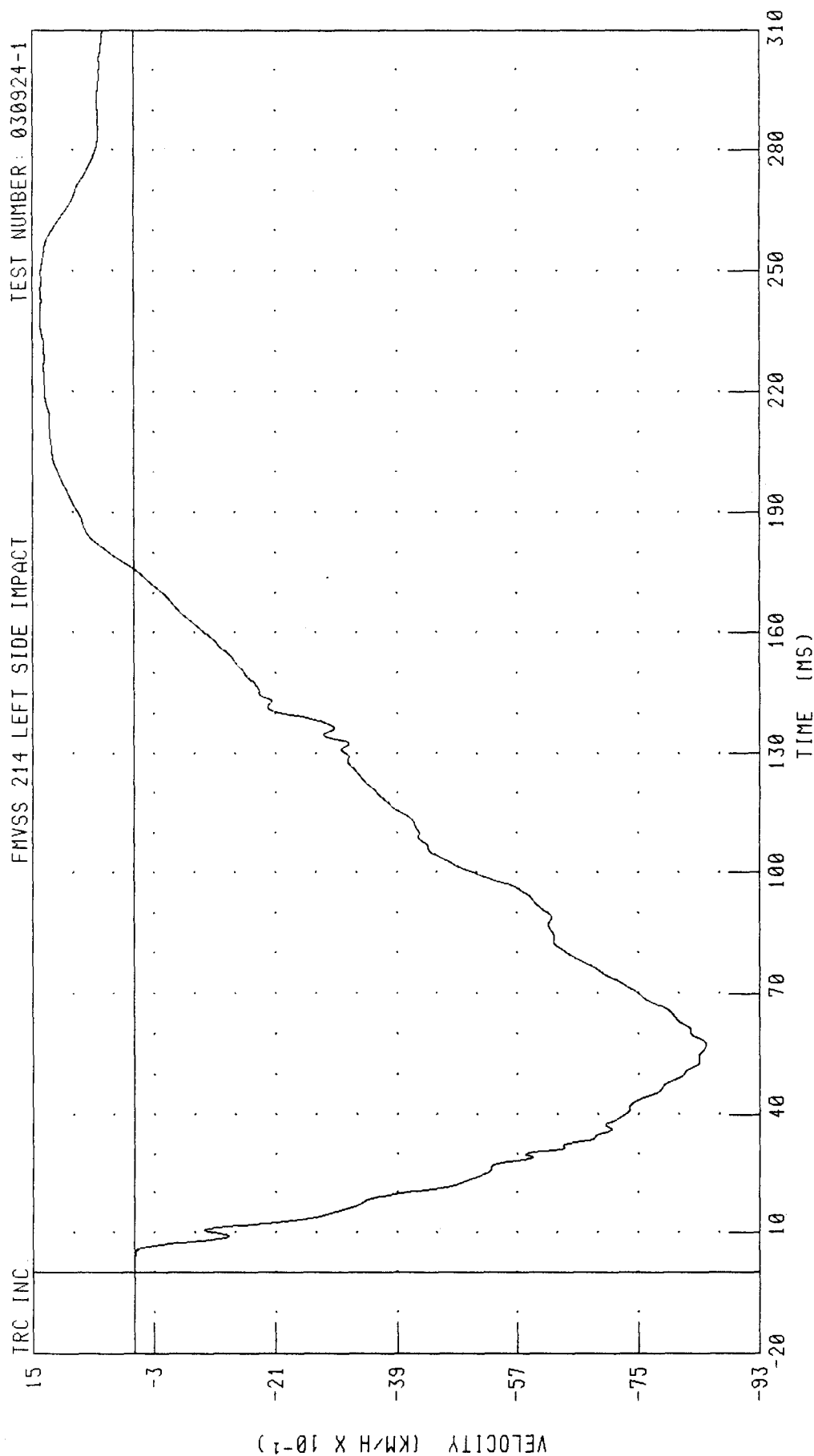
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
RIGHT SIDE SILL AT REAR SEAT Z-AXIS ACCELERATION

FMVSS 214 LEFT SIDE IMPACT TEST NUMBER: 030924-1



CHANNEL: RRSZG1 FILTER: CH CLASS 60 PEAK DATA: 5 90 G @ 139.36 MS, -11.29 G @ 12.56 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
 RIGHT SIDE SILL AT REAR SEAT Z-AXIS VELOCITY



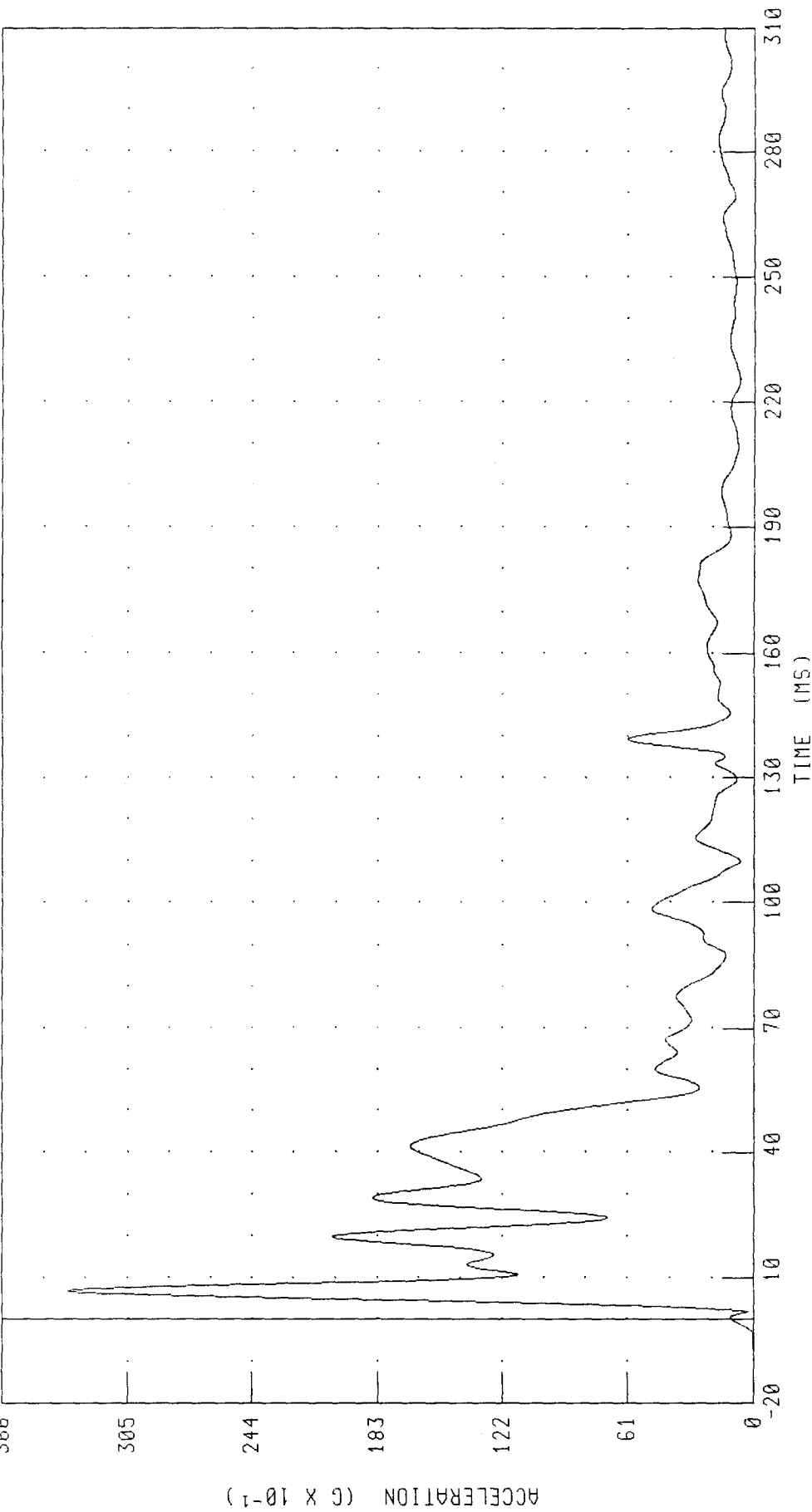
CHANNEL: RRSZV1 FILTER: CH. CLASS 180

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
RIGHT SIDE SILL AT REAR SEAT RESULTANT ACCELERATION

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

TRC INC



PEAK DATA 33 39 G 6 88 MS, 0 00 G 0 -9 84 NS

CHANNEL: RRSRG1 FILTER: CH CLASS 60

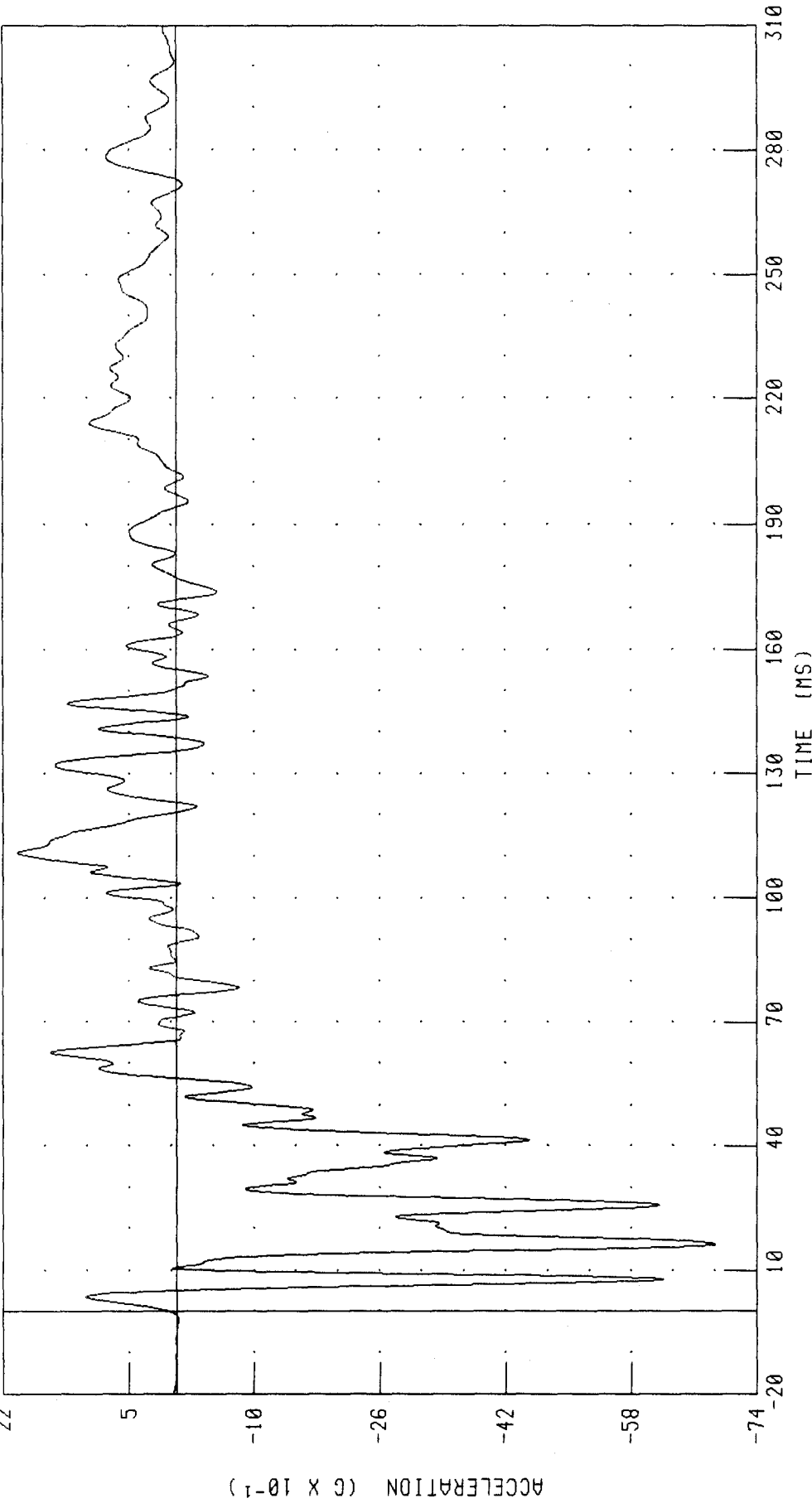
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

REAR FLOORPAN ABOVE AXLE X-AXIS ACCELERATION

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

TRC INC.

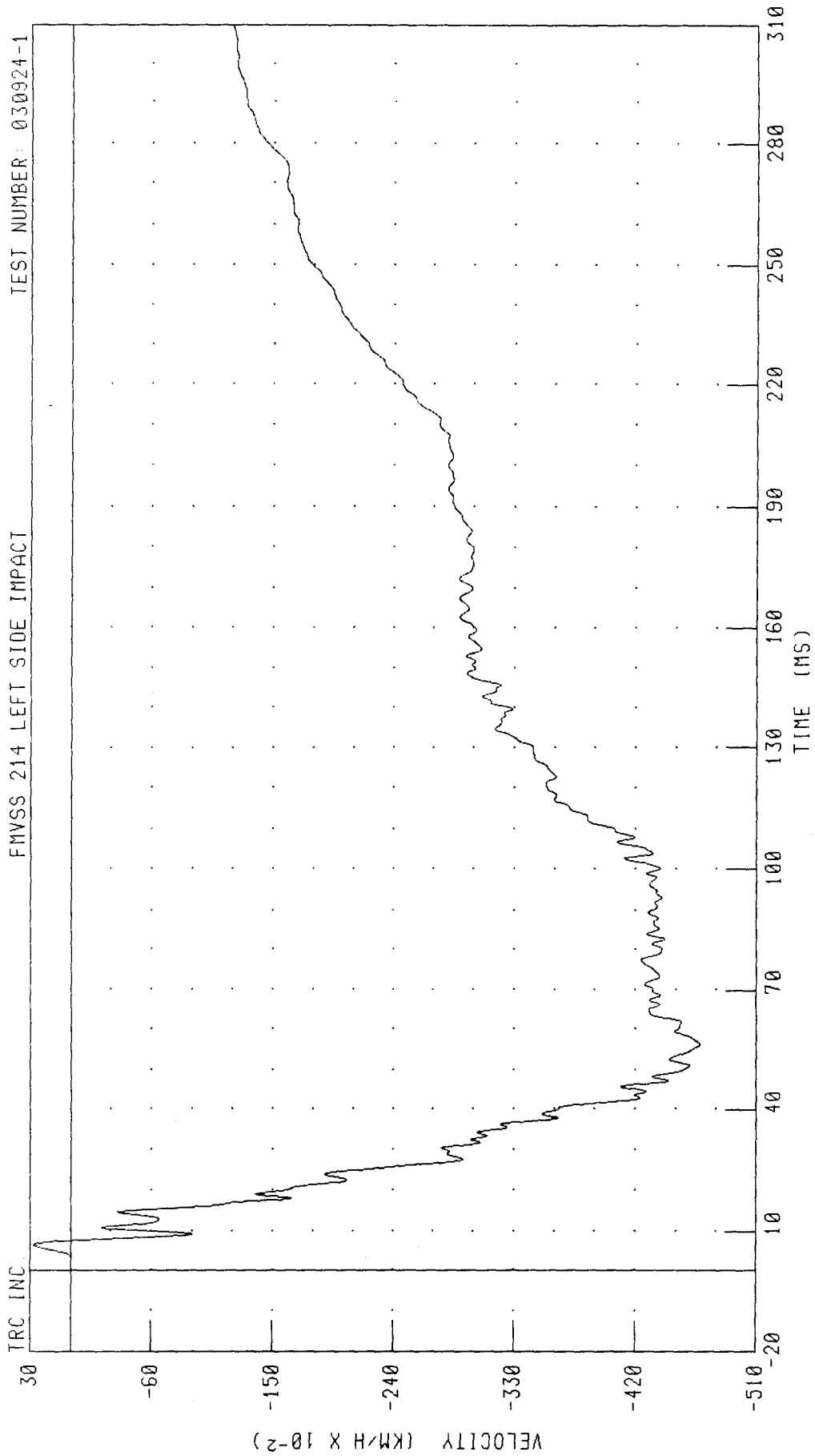


CHANNEL: RDXG1 FILTER: CH. CLASS 60

PEAK DATA: 2 02 G @ 110 88 MS, -6 88 G @ 16 24 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
REAR FLOORPAN ABOVE AXLE X-AXIS VELOCITY

TRC INC. FMVSS 214 LEFT SIDE IMPACT TEST NUMBER: 030924-1



CHANNEL: RDKXV1 FILTER: CH. CLASS 180

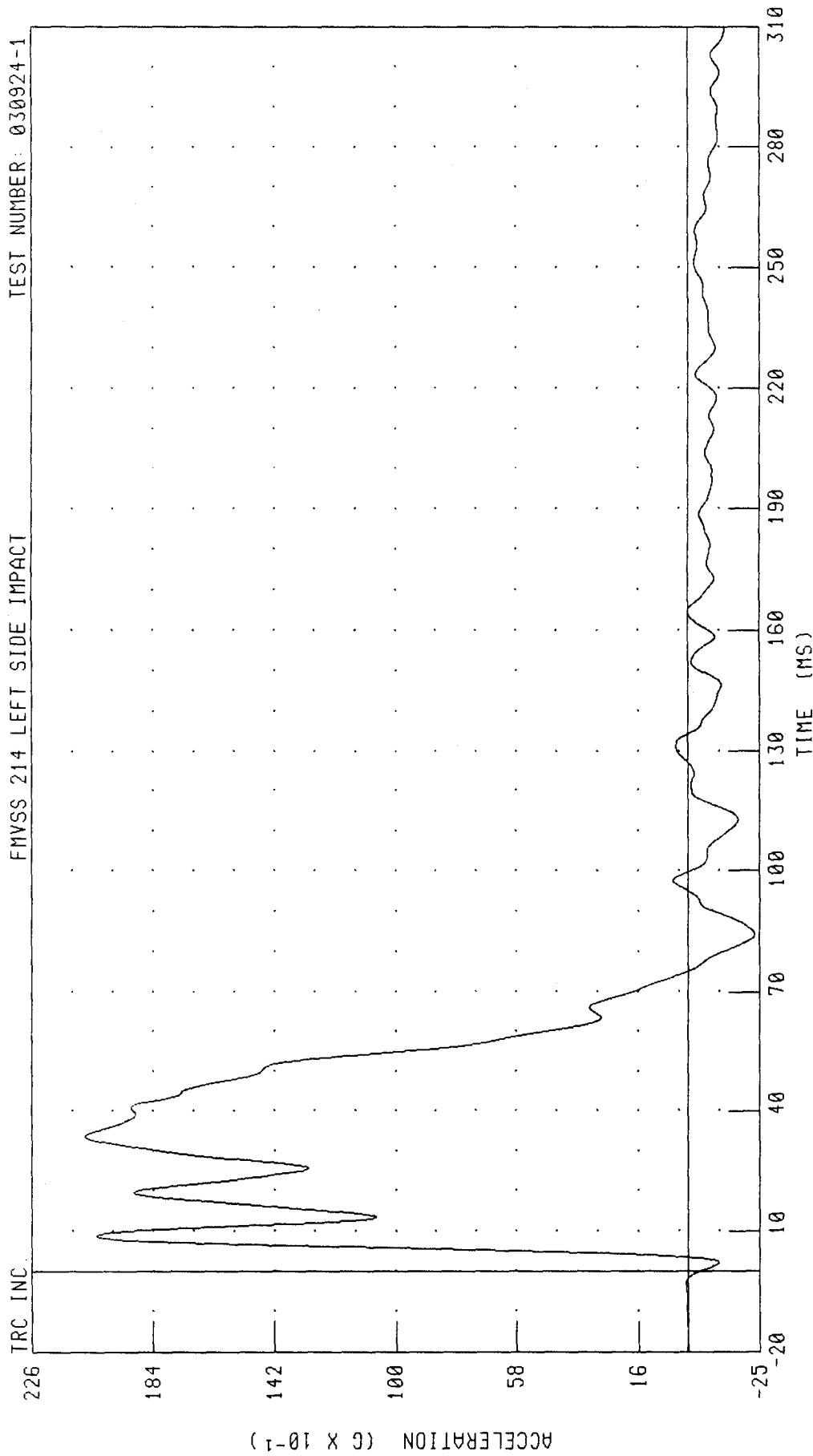
PEAK DATA: 0 27 KM/H @ 6 48 MS, -4 68 KM/H @ 56 16 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

REAR FLOORPAN ABOVE AXLE Y-AXIS ACCELERATION

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT



CHANNEL: RDKY61 FILTER: CH. CLASS 60

PEAK DATA: 20.87 G @ 33.68 MS, -2.34 G @ 84.24 MS

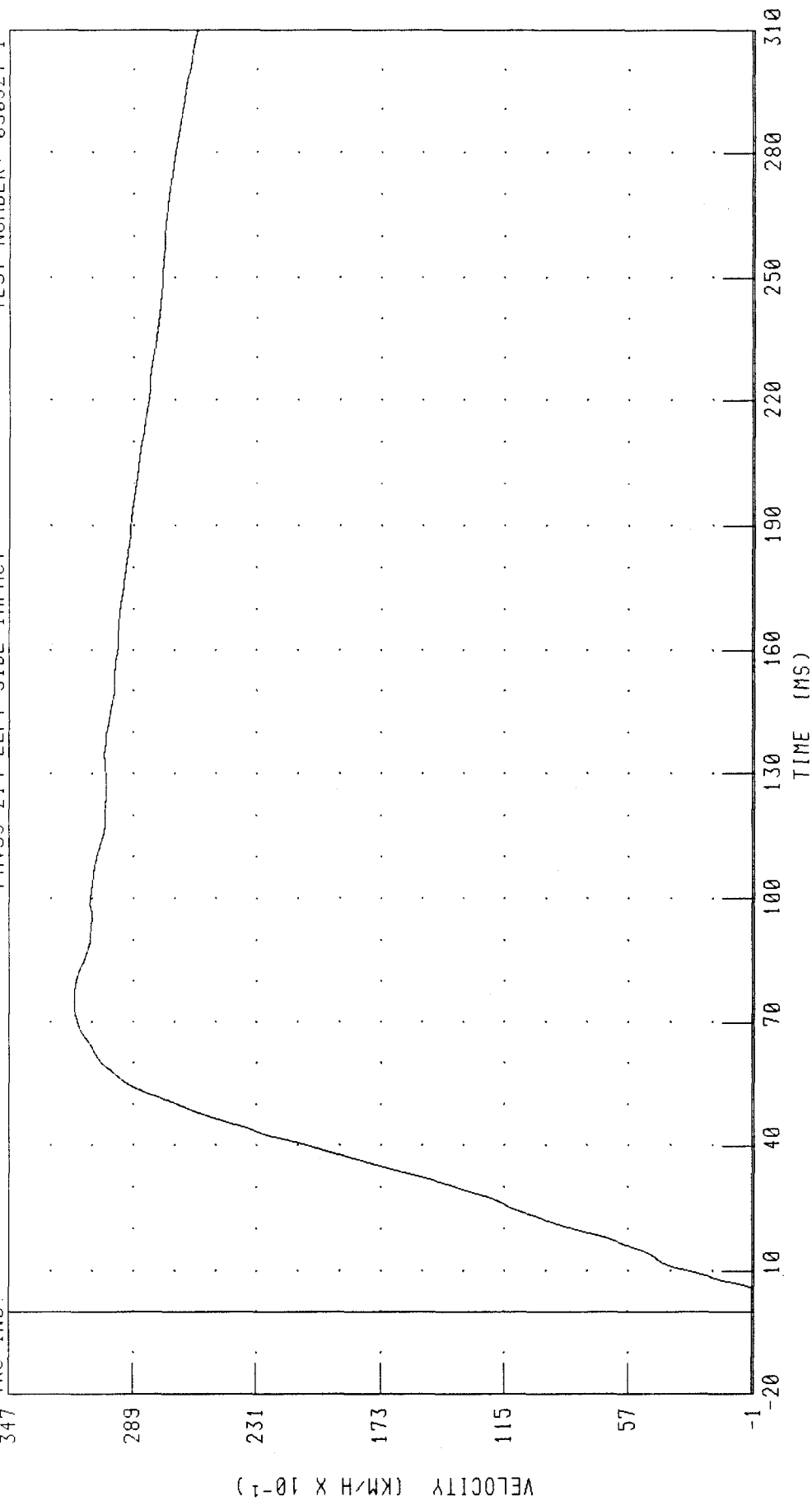
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

REAR FLOORPAN ABOVE AXLE Y-AXIS VELOCITY

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

TRC INC.



CHANNEL: RDKYV1 FILTER: CH. CLASS 180

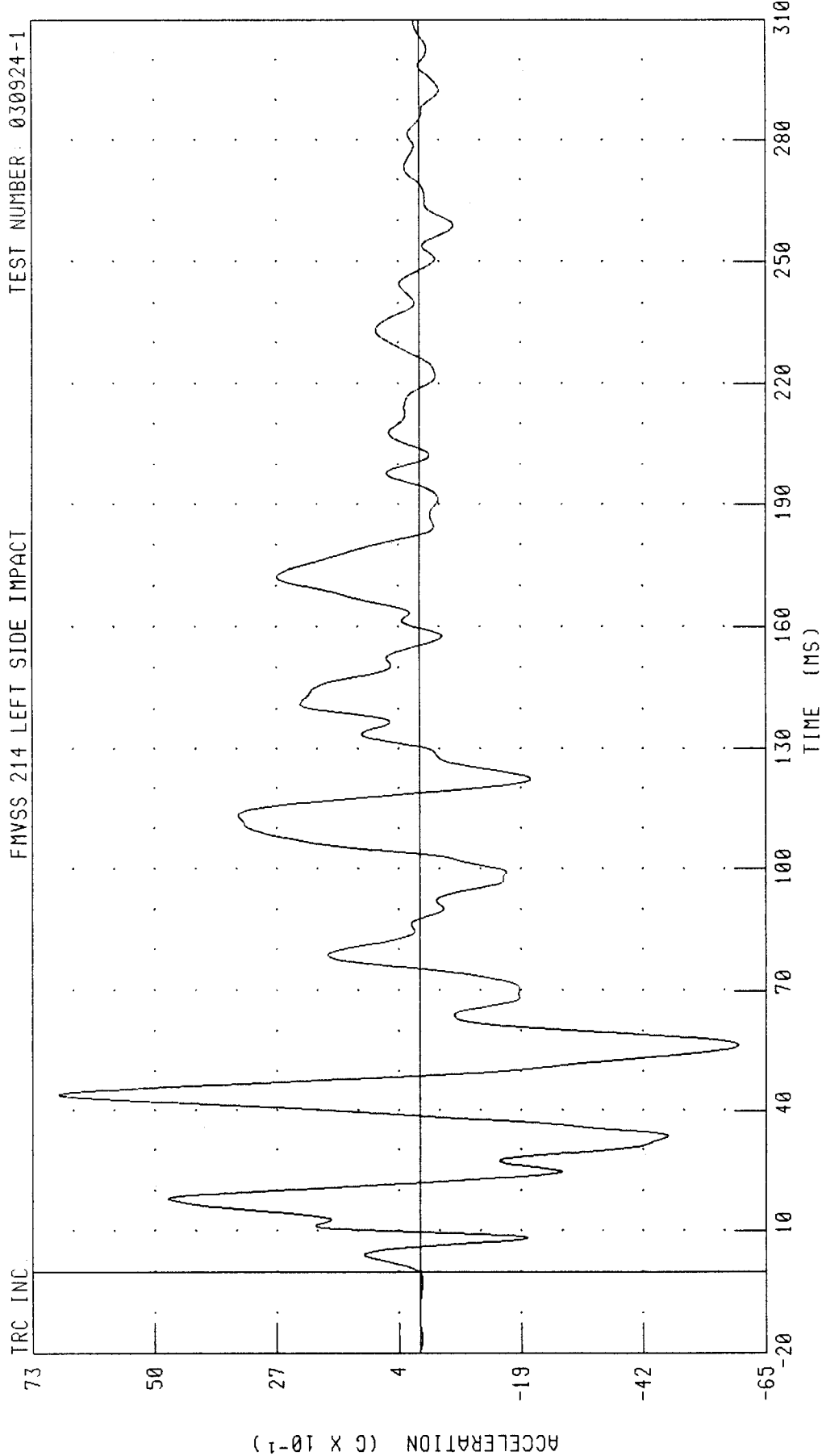
PEAK DATA: 31.69 KM/H @ 75.04 MS; -0.13 KM/H @ 5.04 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

REAR FLOORPAN ABOVE AXLE Z-AXIS ACCELERATION

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT



CHANNEL: RDKZG1 FILTER: CH. CLASS 60

PEAK DATA: 6.81 G @ 44.08 MS; -5.99 G @ 56.56 MS

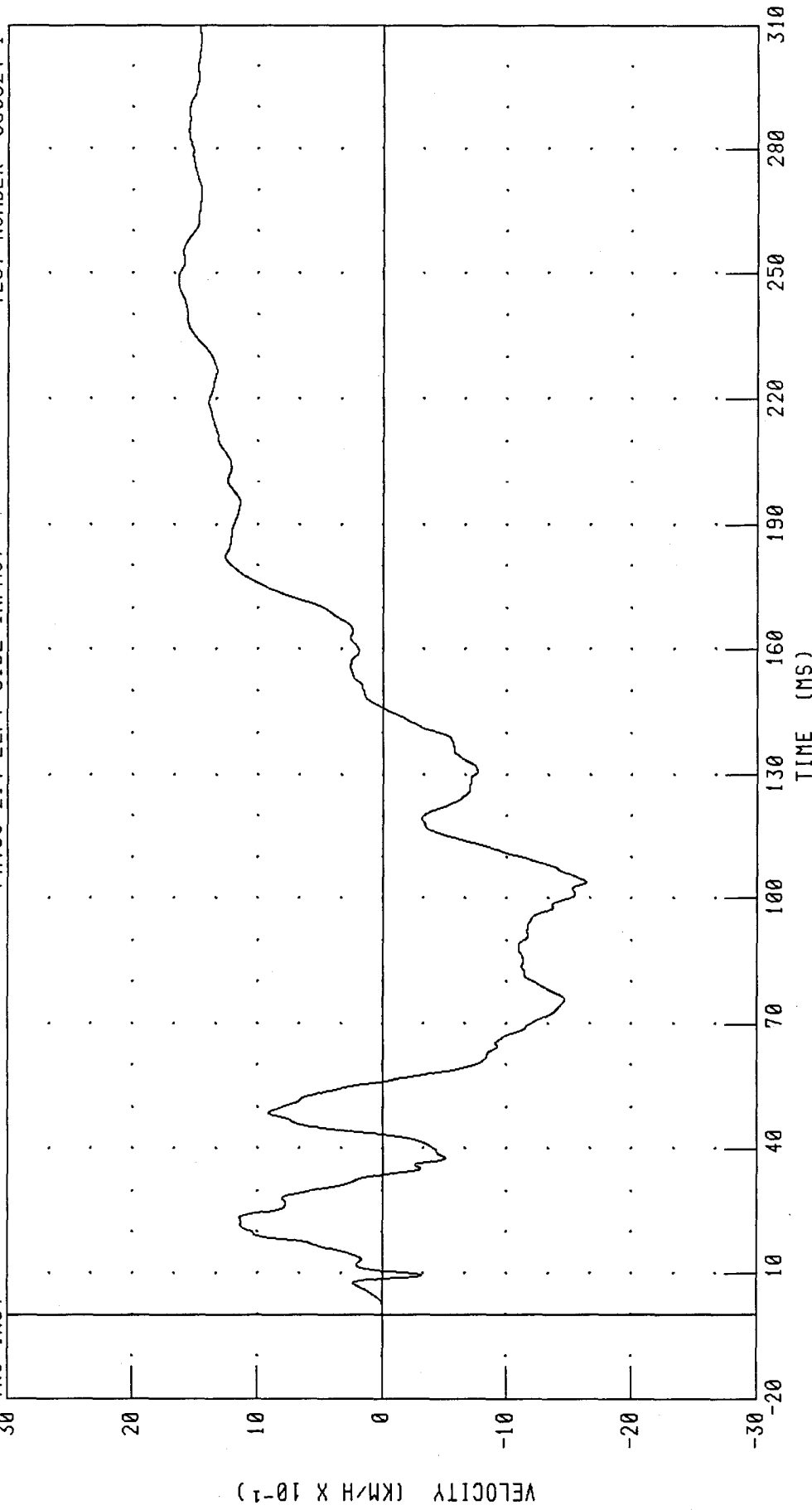
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

REAR FLOORPAN ABOVE AXLE Z-AXIS VELOCITY

TRC INC.

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030924-1



PEAK DATA: 1.63 KM/H @ 247.68 MS, -1.64 KM/H @ 104.08 MS

CHANNEL: RDKZV1 FILTER: CH. CLASS 180

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

REAR FLOORPAN ABOVE AXLE RESULTANT ACCELERATION

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

TRC INC.

234

195

ACCELERATION ($G \times 10^{-1}$)

156

117

78

39

0

-20

TIME (MS)

310

280

250

220

190

160

130

100

70

40

10

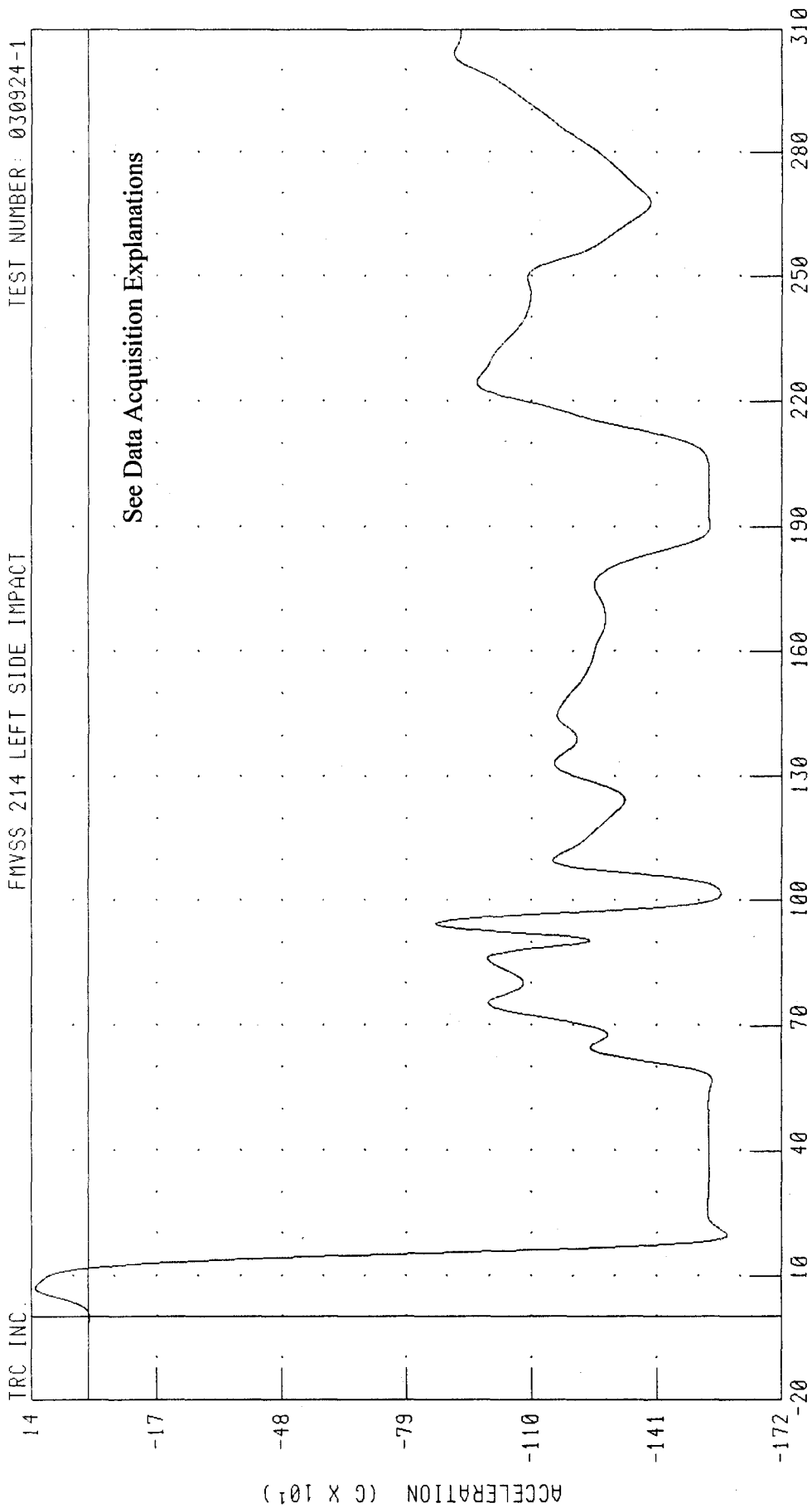
CHANNEL: RDKRC1 FILTER: CH CLASS 60

PEAK DATA: 21.45 G @ 33.68 MS; 0.01 G @ -7.92 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
LEFT SIDE STILL AT FRONT SEAT Y-AXIS ACCELERATION

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

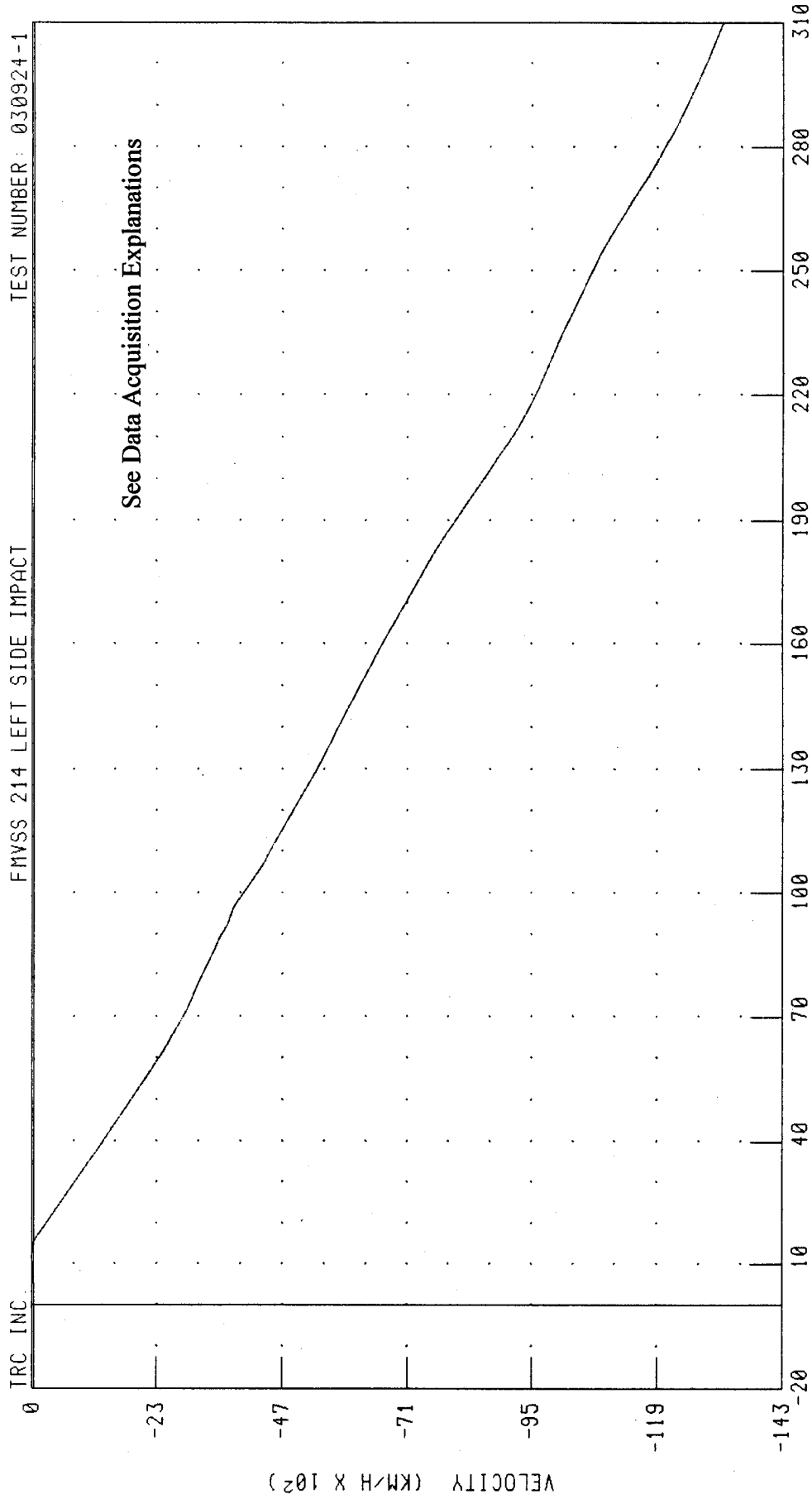


CHANNEL: LFSYC1 FILTER: CH. CLASS 60

PEAK DATA: 129 95 G @ 7.04 MS, -1584.64 G @ 19.52 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

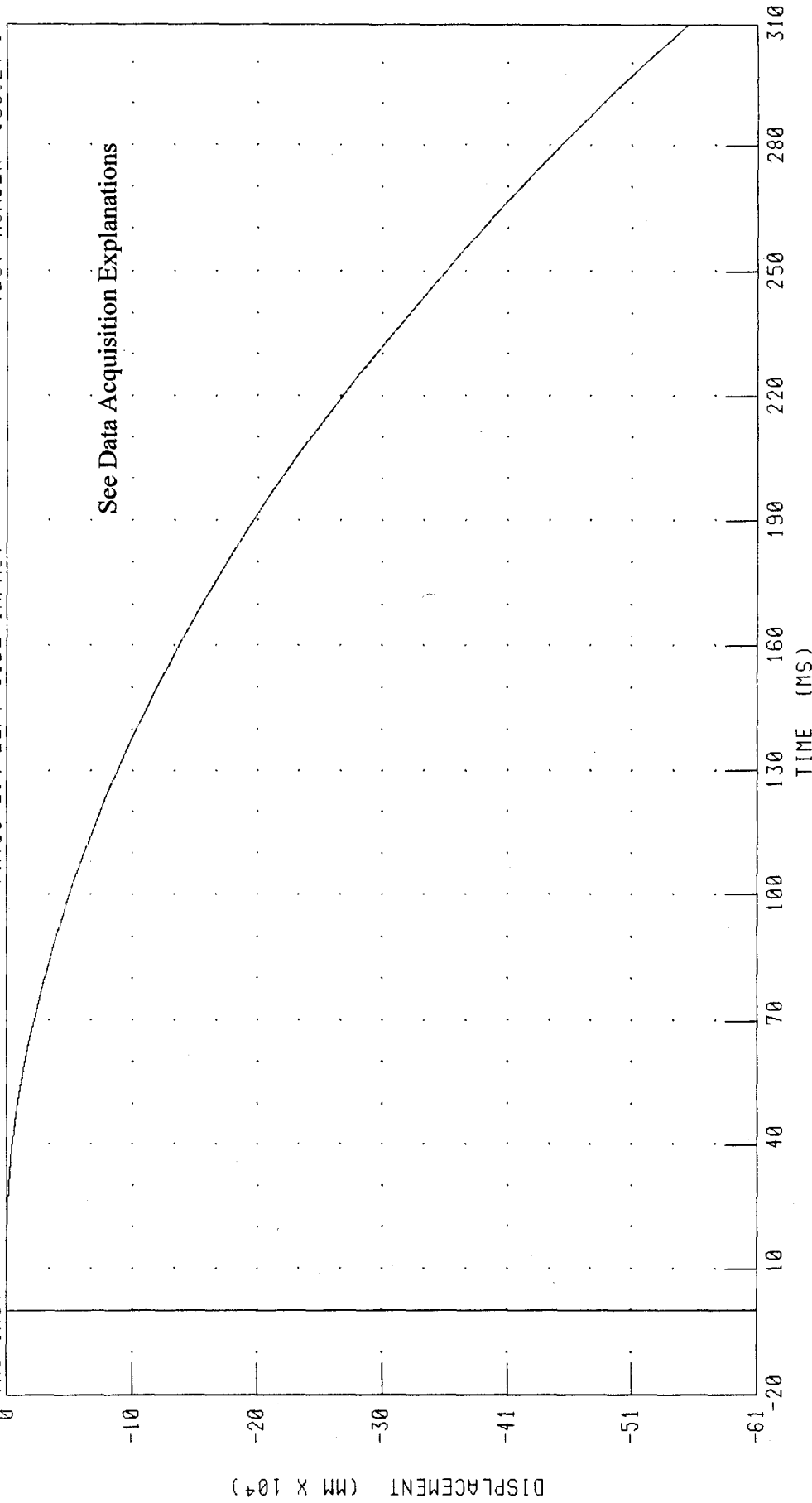
LEFT SIDE SILL AT FRONT SEAT Y-AXIS VELOCITY



CHANNEL: LFSYV1 FILTER: CH. CLASS 180 PEAK DATA: 26.57 KM/H @ 11.84 MS; -13235.29 KM/H @ 310.00 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
LEFT SIDE SILL AT FRONT SEAT Y-AXIS DISPLACEMENT

TRC INC. FNVSS 214 LEFT SIDE IMPACT TEST NUMBER: 030924-1



CHANNEL: LFSYD1 FILTER: CH. CLASS 180

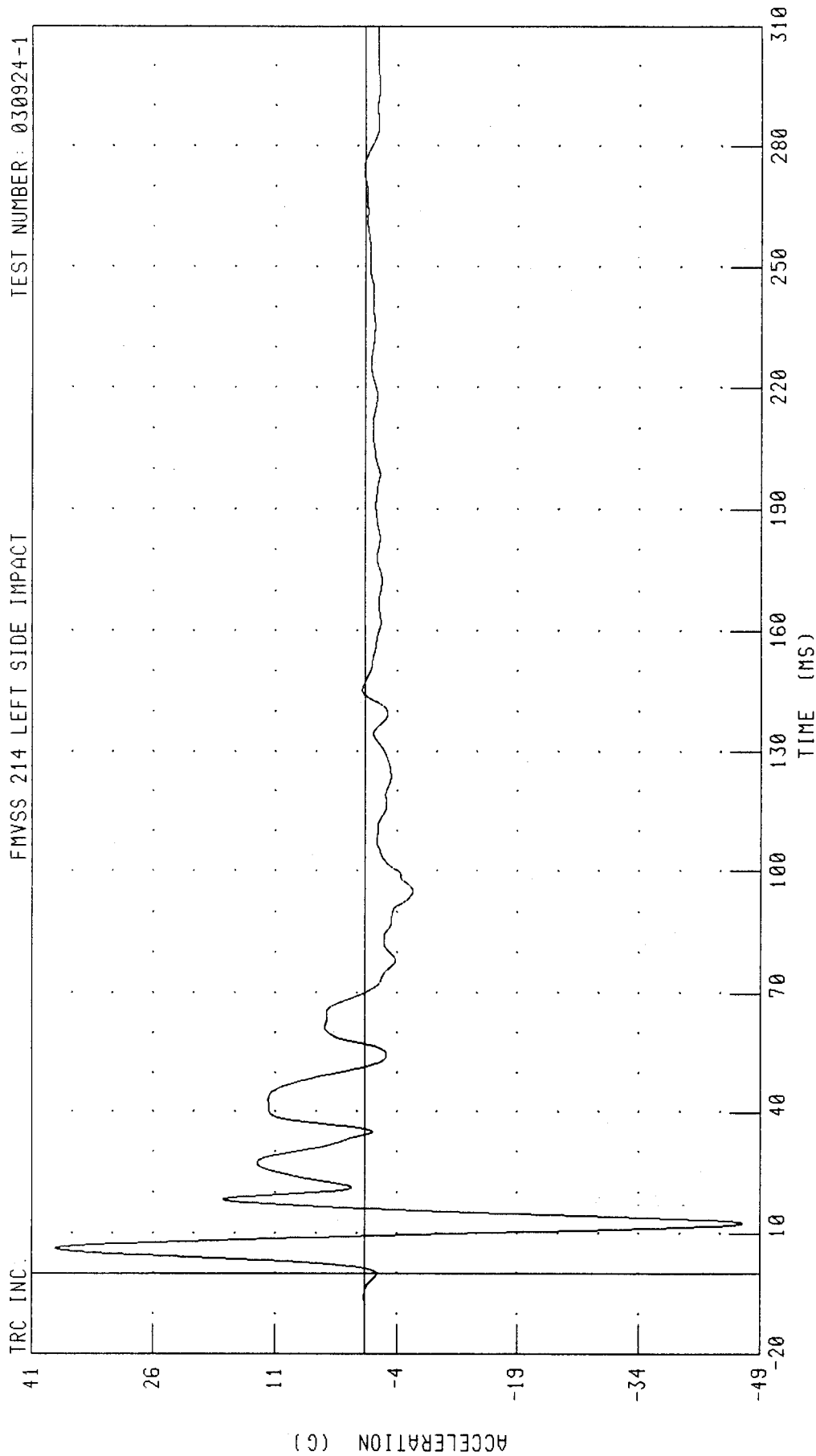
PEAK DATA: 51.04 MM @ 15.36 MS, -562532.44 MM @ 310.00 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

LEFT SIDE SILL AT REAR SEAT Y-AXIS ACCELERATION

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT



CHANNEL: LRSYG1 FILTER: CH. CLASS 60

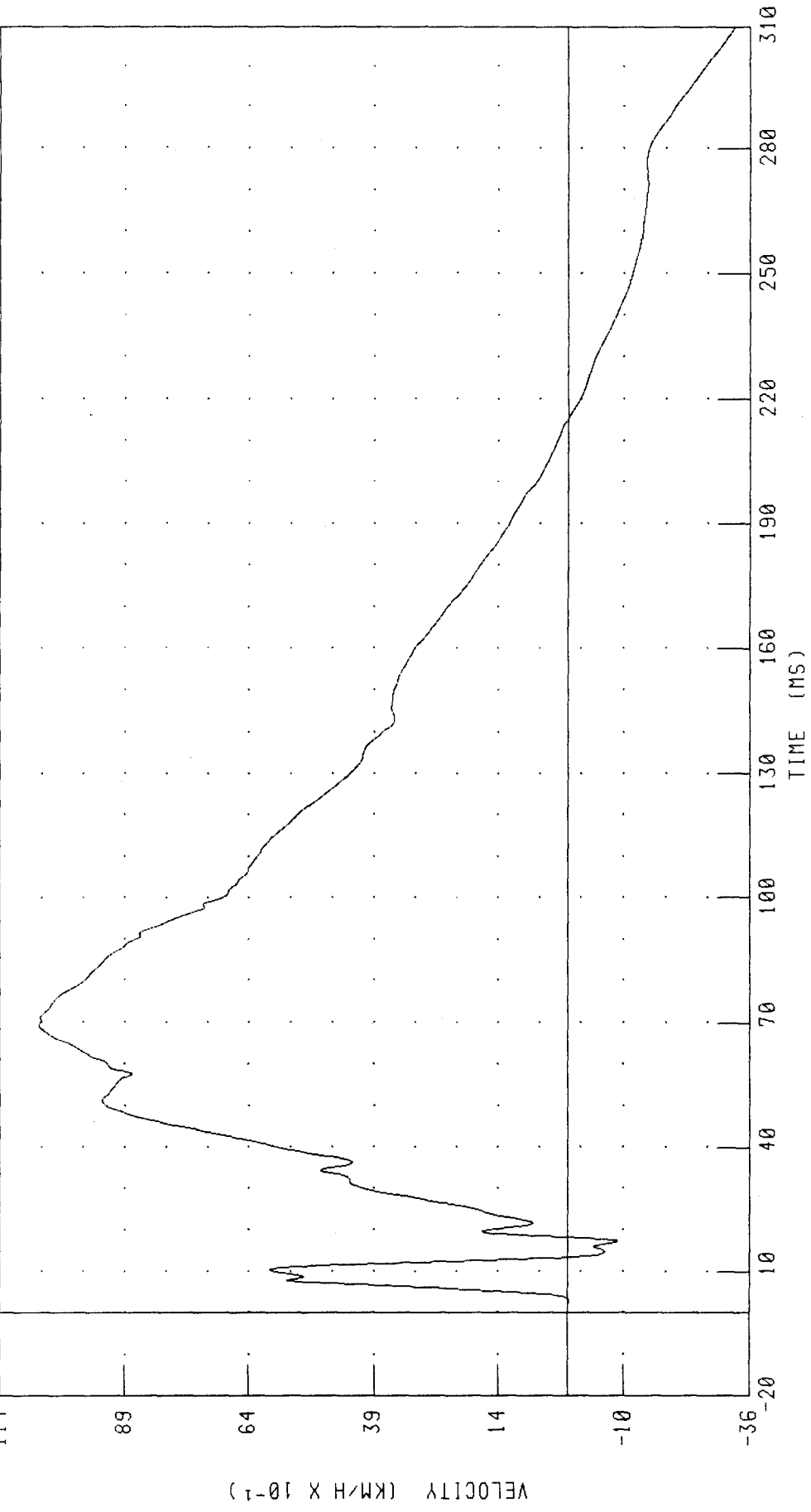
PEAK DATA: 38.11 G @ 6.16 MS; -46.90 G @ 12.48 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
LEFT SIDE SILL AT REAR SEAT Y-AXIS VELOCITY

TRC INC

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030924-1



PEAK DATA: 10 62 KM/H @ 69.28 MS, -3 32 KM/H @ 310.00 MS

CHANNEL: LRSYV1 FILTER: CH. CLASS 180

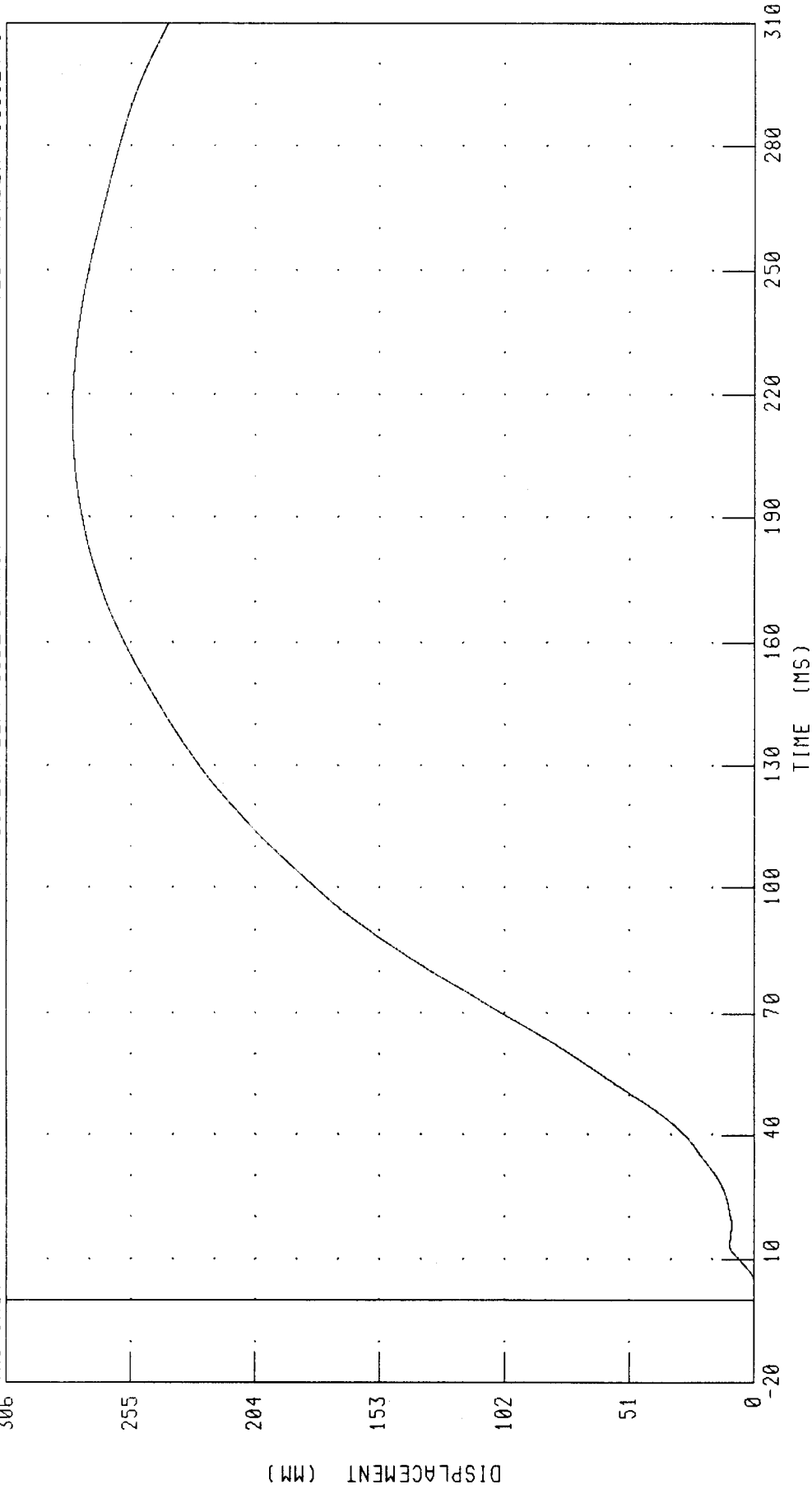
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

LEFT SIDE SILL AT REAR SEAT Y-AXIS DISPLACEMENT

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

TRC INC.

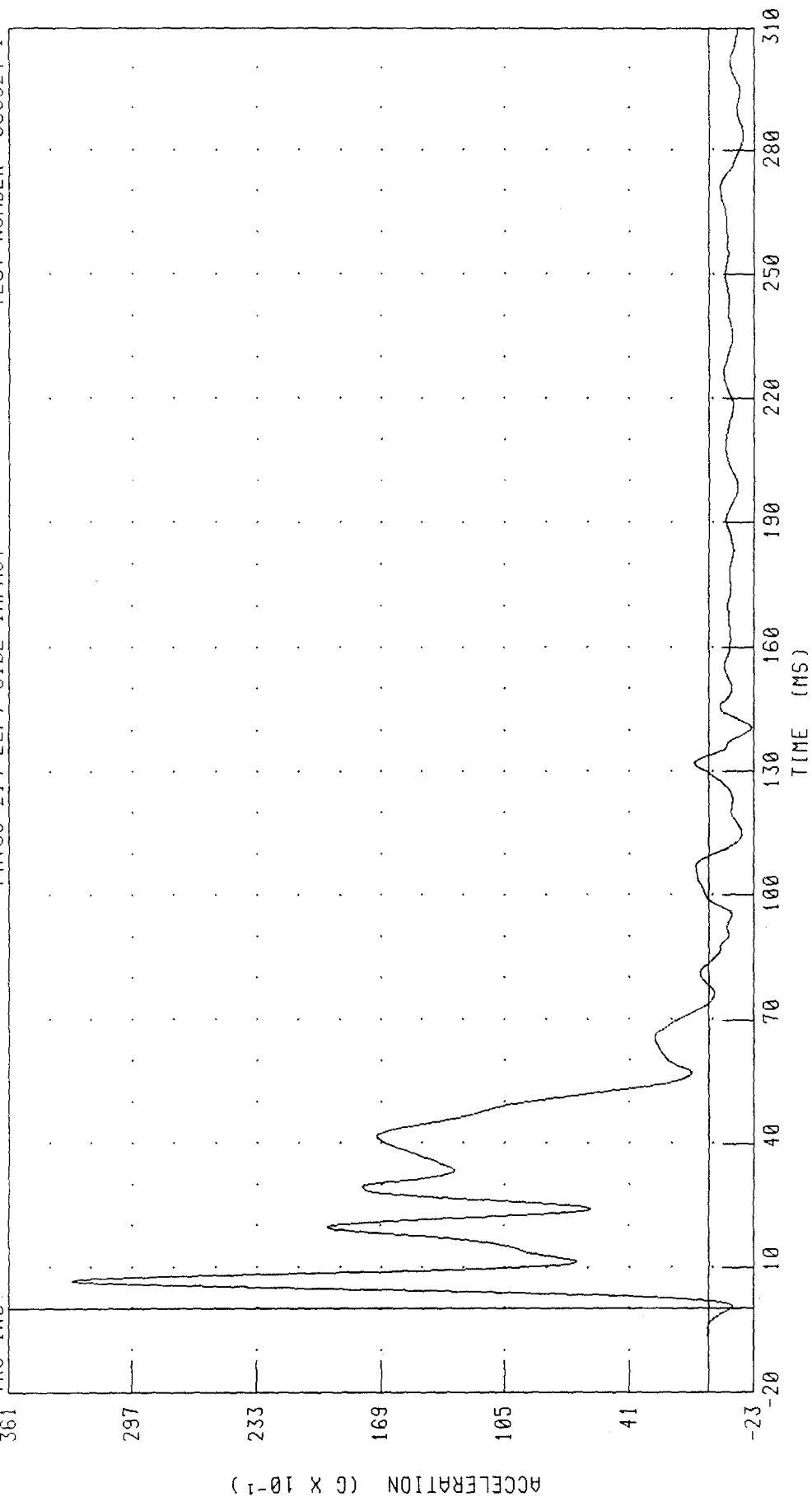


CHANNEL: LRSYD1 FILTER: CH. CLASS 180

PEAK DATA: 278.91 MM @ 215.36 MS, -0.01 MM @ 3.60 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
RIGHT REAR OCCUPANT COMPARTMENT Y-AXIS ACCELERATION

TRC INC. FMVSS 214 LEFT SIDE IMPACT TEST NUMBER: 030924-1



CHANNEL: RRTYG1 FILTER: CH CLASS 60 PEAK DATA: 32.80 G @ 6.80 MS, -2.17 G @ 140.56 MS

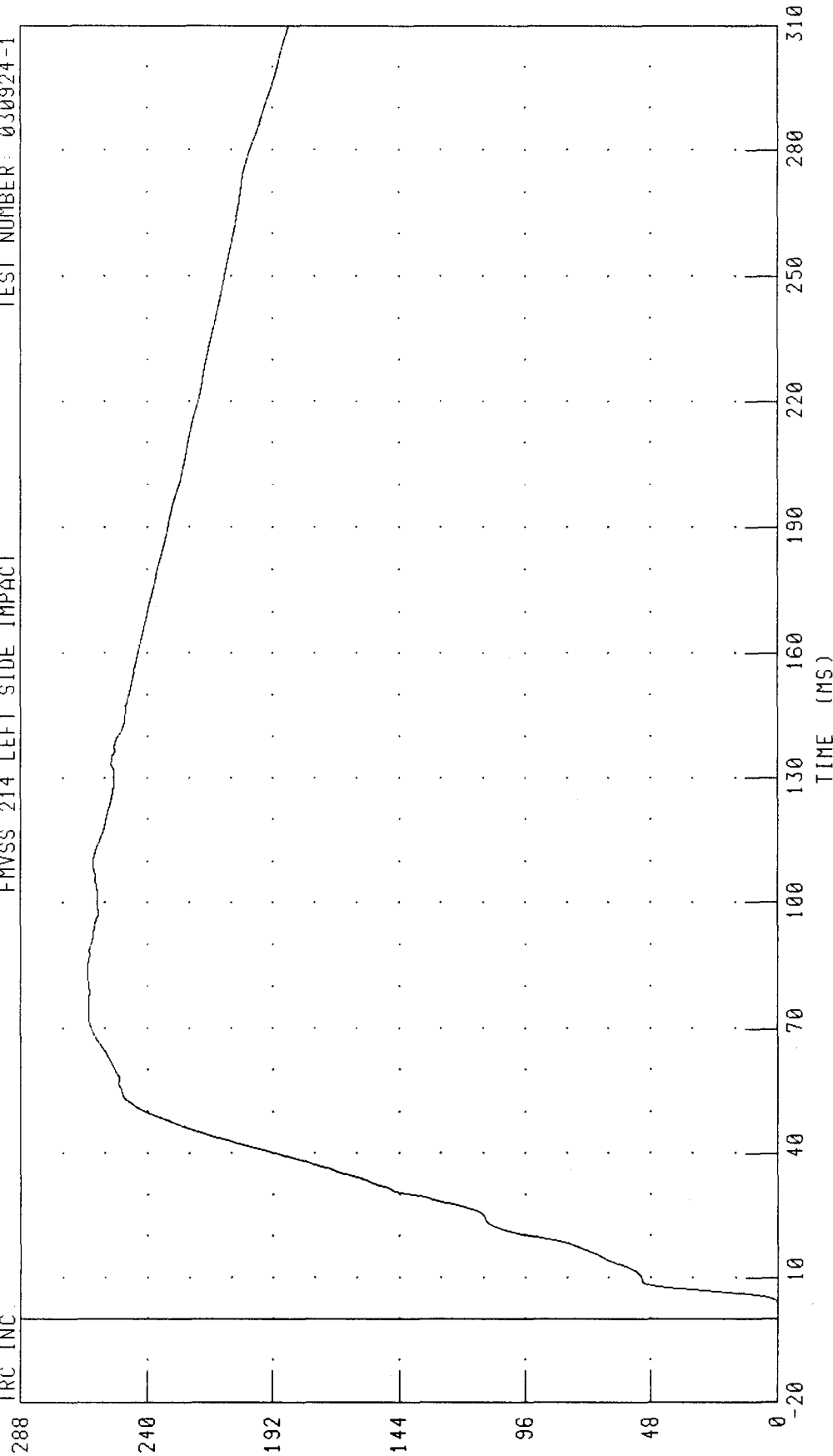
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

RIGHT REAR OCCUPANT COMPARTMENT Y-AXIS VELOCITY

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

TRC INC.

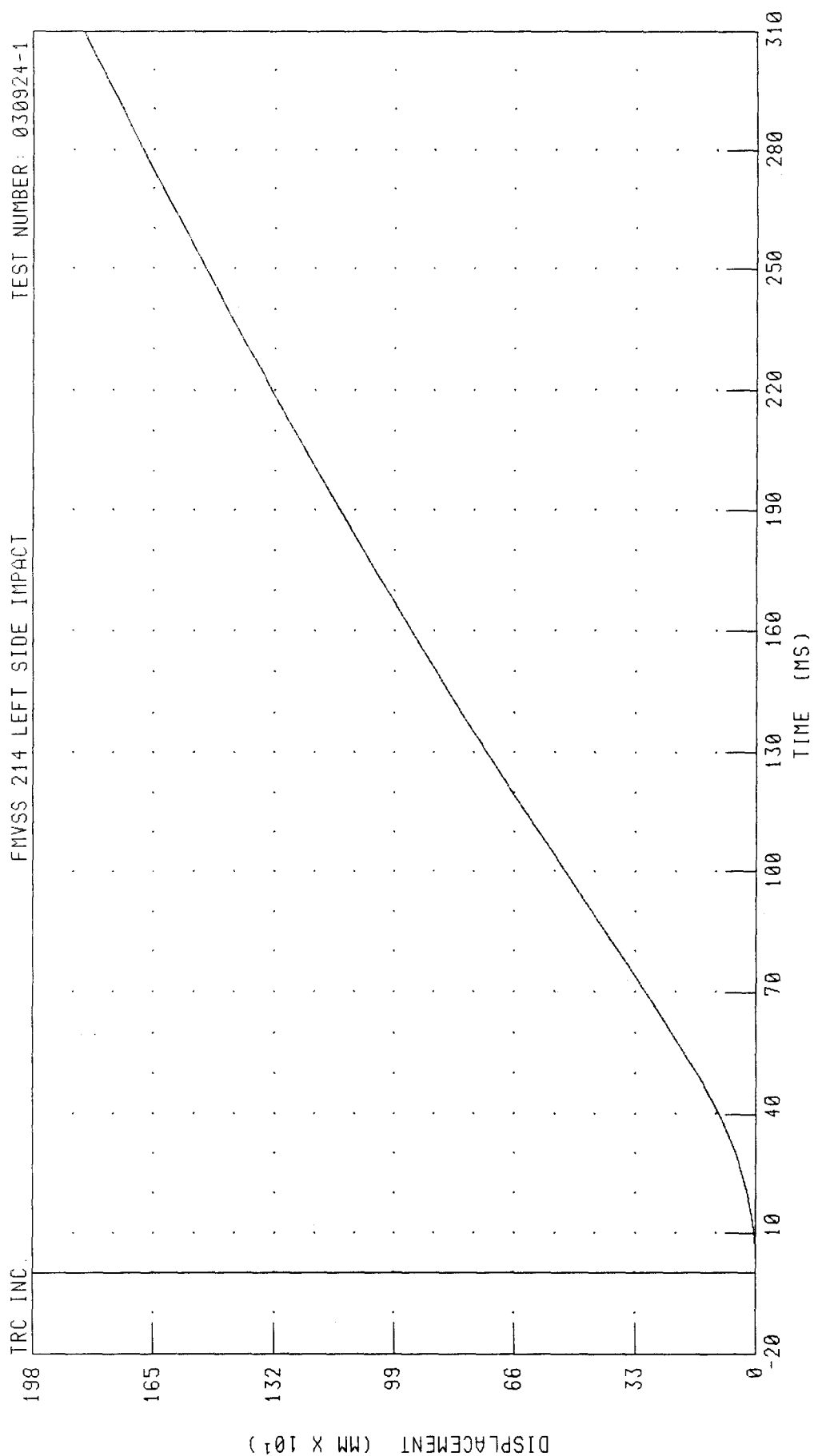


CHANNEL: RRTYV1 FILTER: CH CLASS 180

PEAK DATA: 26 26 KM/H @ 83.04 MS; 0 00 KM/H @ 3 28 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
 RIGHT REAR OCCUPANT COMPARTMENT Y-AXIS DISPLACEMENT

TRC INC. FMVSS 214 LEFT SIDE IMPACT TEST NUMBER: 030924-1



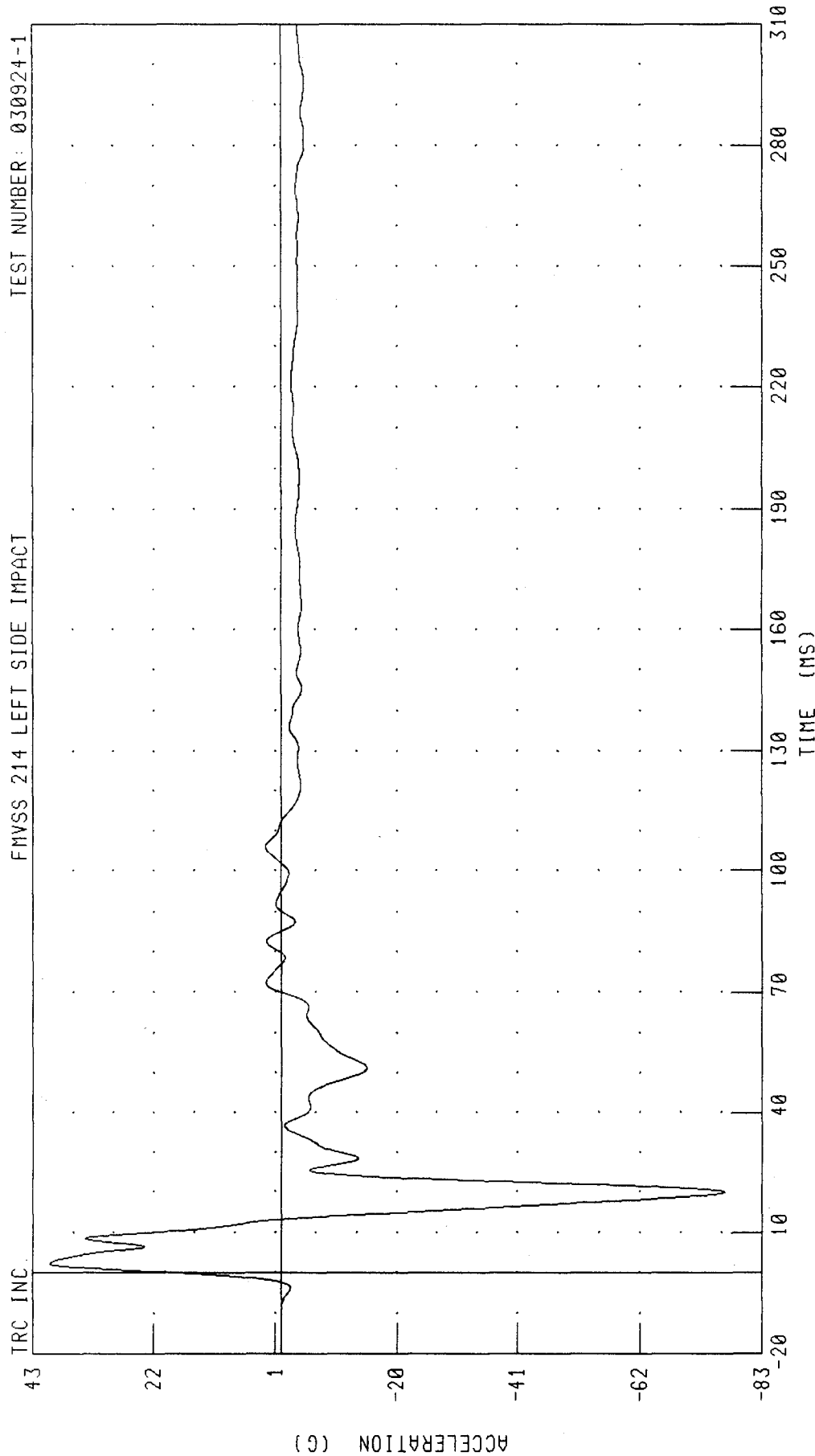
CHANNEL: RRTYD1 FILTER: CH CLASS 180 PEAK DATA: 1840 52 MM @ 310 00 MS, 0 00 MM @ 0 00 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

LEFT LOWER A-POST Y-AXIS ACCELERATION

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030924-1

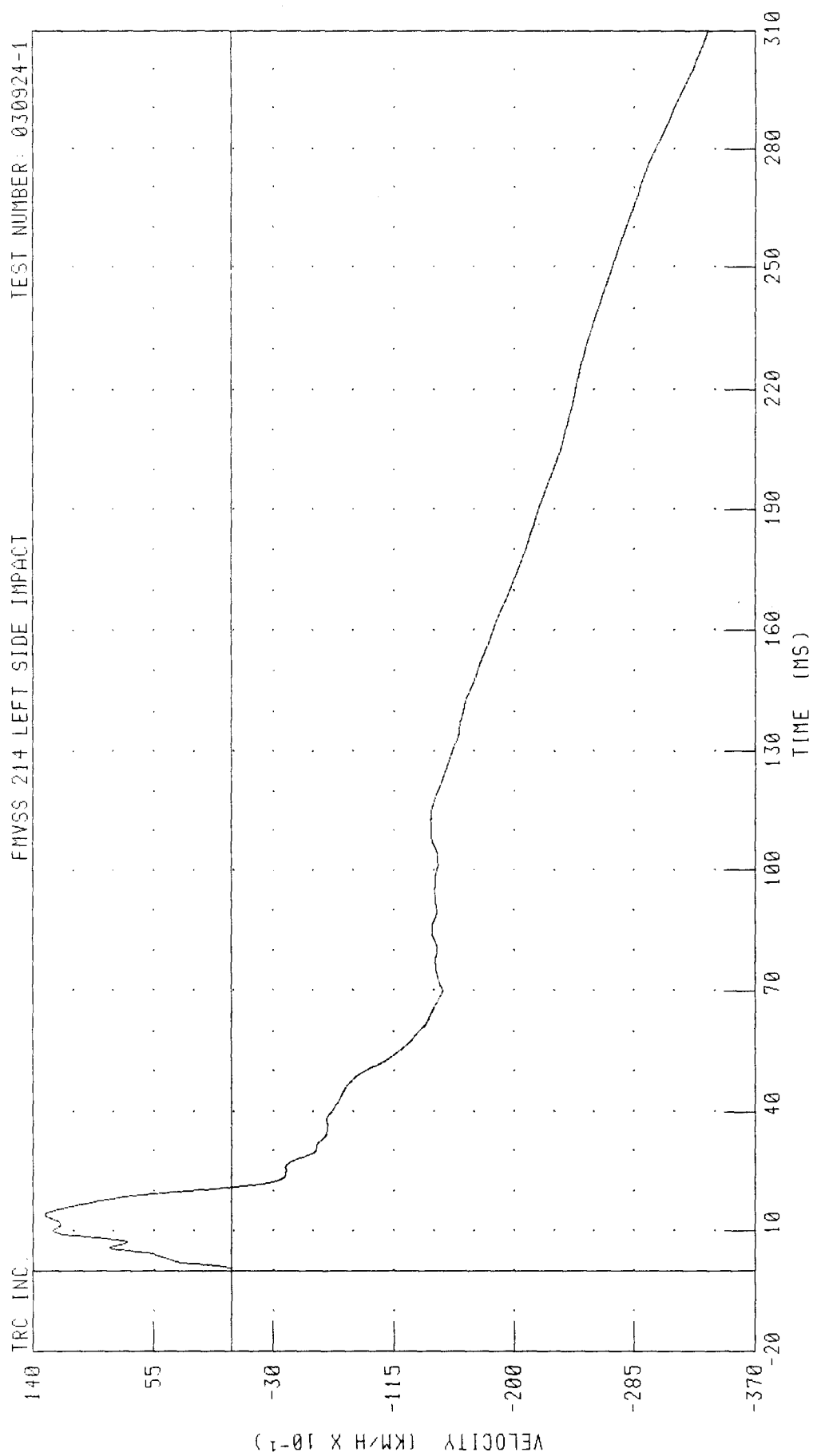


CHANNEL: LAYG1 FILTER: CH CLASS 60

PEAK DATA: 39.99 G @ 2.24 MS, -76.55 G @ 19.92 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
LEFT LOWER A-POST Y-AXIS VELOCITY

FMVSS 214 LEFT SIDE IMPACT TEST NUMBER: 030924-1



CHANNEL L LAYV1 FILTER: CH. CLASS 180

PEAK DATA 13 17 KM/H @ 14 00 MS, -33 72 KM/H @ 310 00 MS

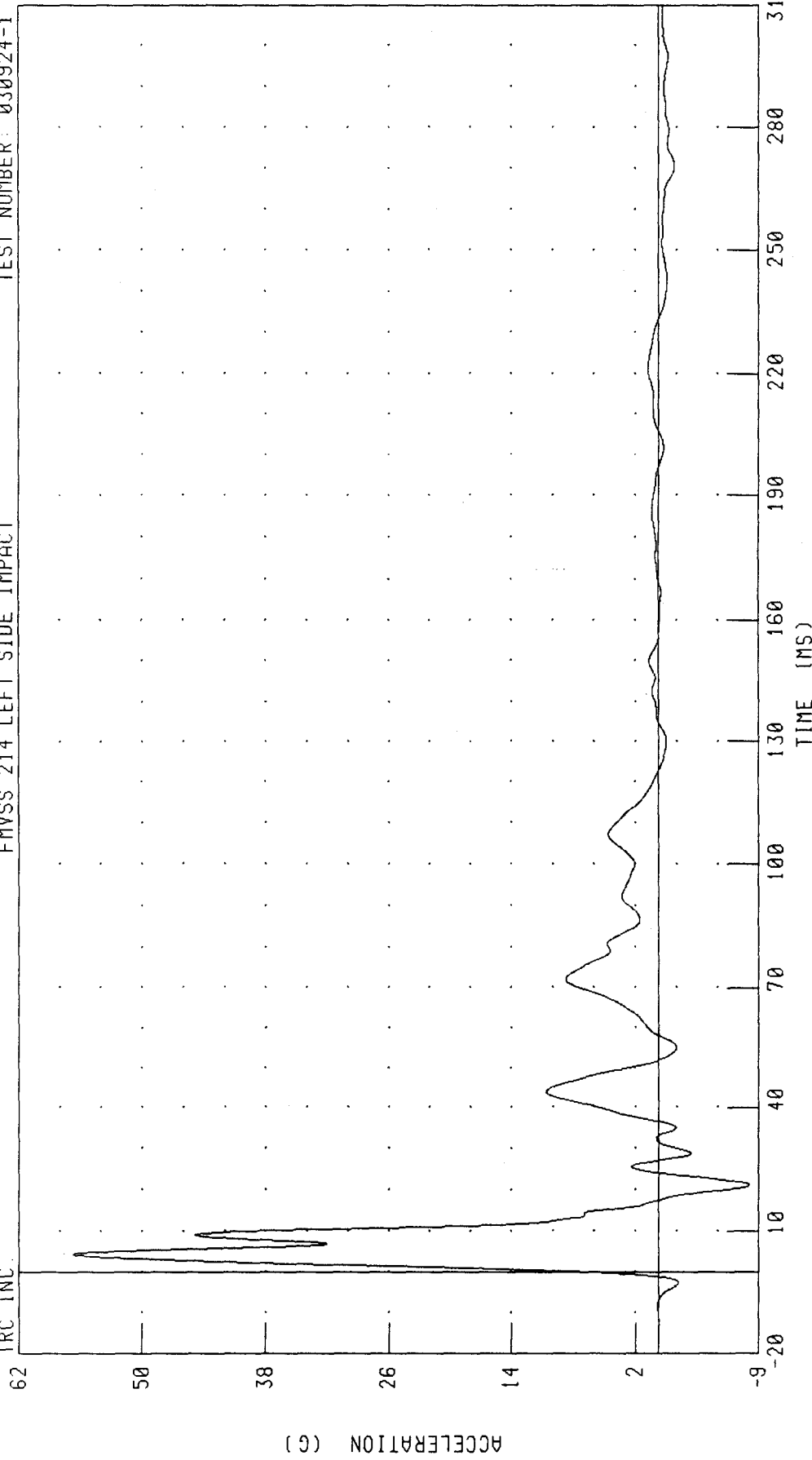
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

LEFT MIDDLE A-POST Y-AXIS ACCELERATION

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

TRC INC.

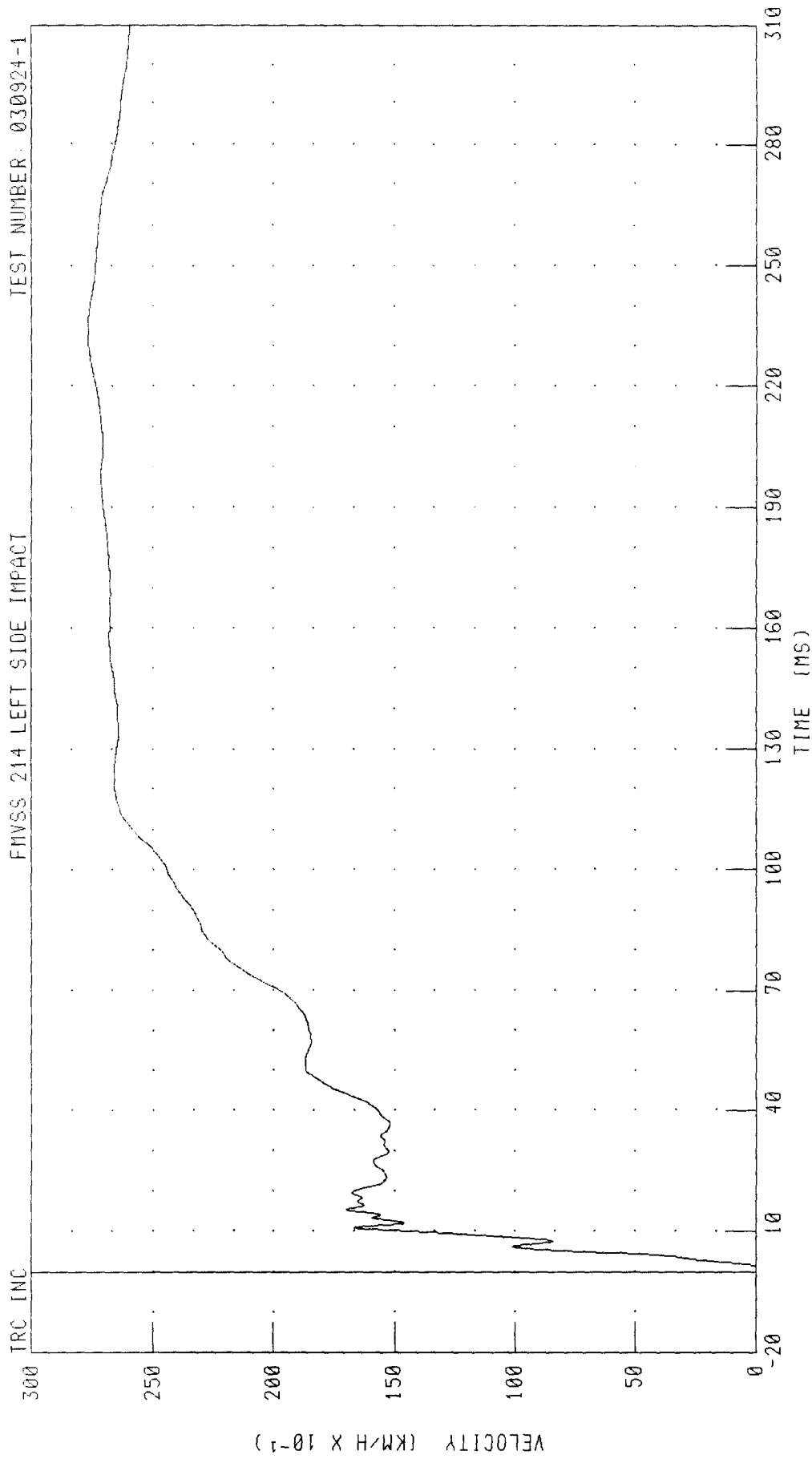


PEAK DATA: 57 05 C @ 40 MS, -8.83 G @ 21.20 MS

CHANNEL: LMAYG1 FILTER: CH. CLASS 60

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
LEFT MIDDLE A-POST Y-AXIS VELOCITY

TRC INC FNVSS 214 LEFT SIDE IMPACT TEST NUMBER: 030924-1



CHANNEL: LMAYV1 FILTER: CH CLASS 180 PEAK DATA 27 66 KM/H @ 234 00 MS, -0 06 KM/H @ 0 88 MS

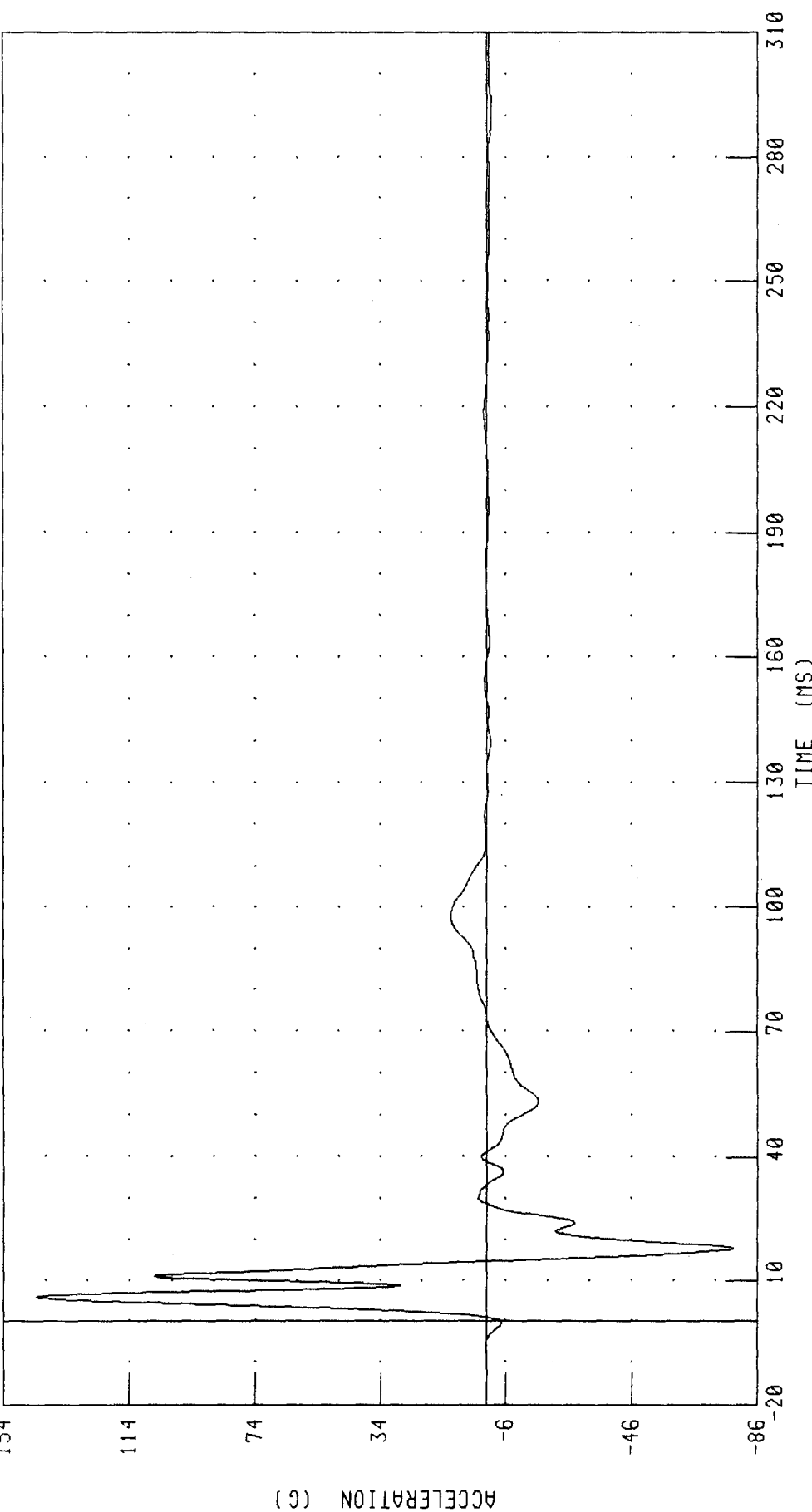
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

LEFT LOWER B-POST Y-AXIS ACCELERATION

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

TRC INC.



CHANNEL: LLBYG1 FILTER: CH CLASS 60

PEAK DATA: 143.64 G @ 5.92 MS, -78.34 G @ 18.00 MS

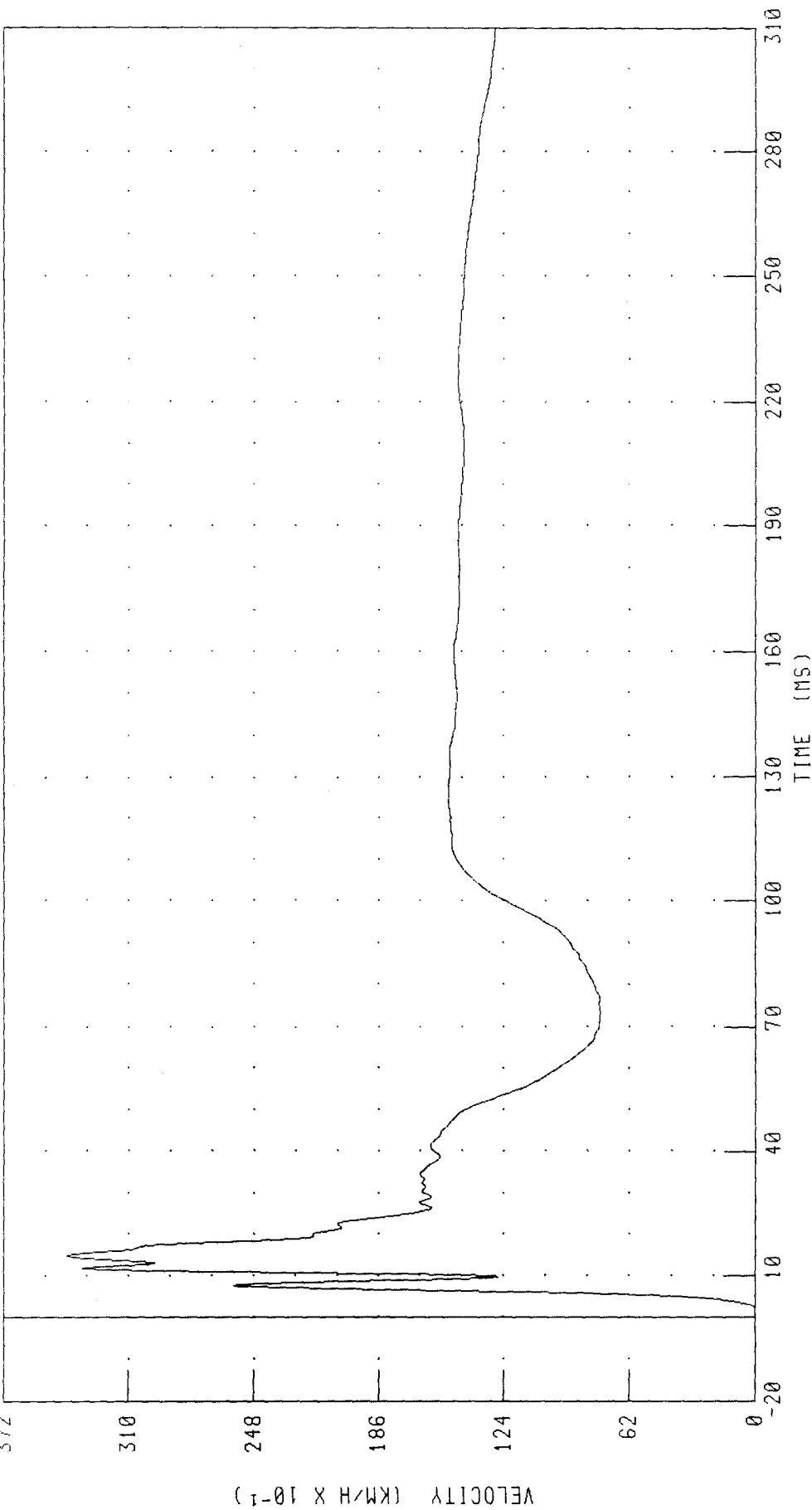
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

LEFT LOWER B-POST Y-AXIS VELOCITY

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030924-1

TRC INC.

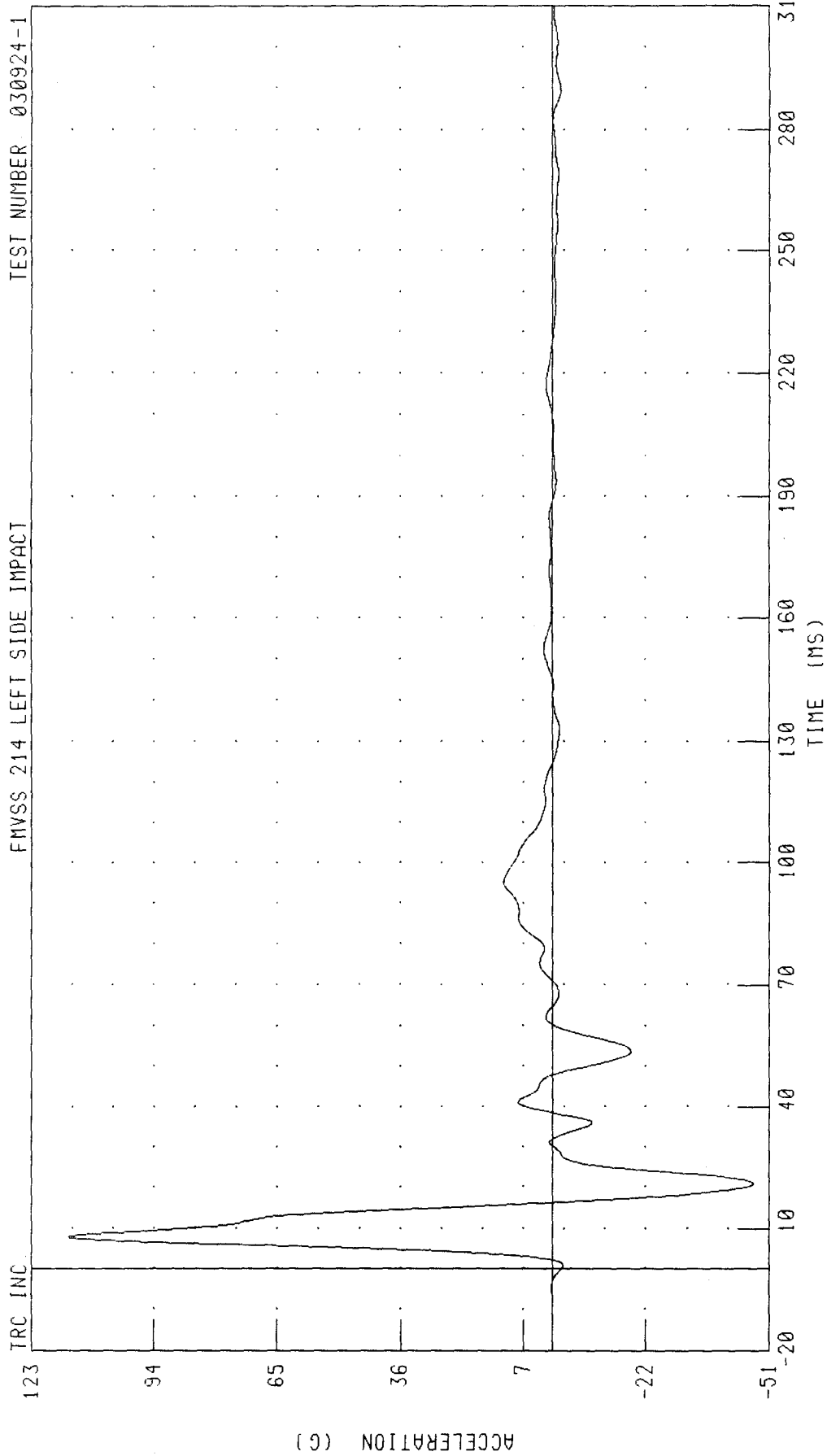


PEAK DATA: 34 06 KM/H @ 14 88 MS, -0 01 KM/H @ 1 84 MS

CHANNEL: LLBYV1 FILTER CH: CLASS 180

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
LEFT MIDDLE B-POST Y-AXIS ACCELERATION

TRC INC. FMVSS 214 LEFT SIDE IMPACT TEST NUMBER 030924-1



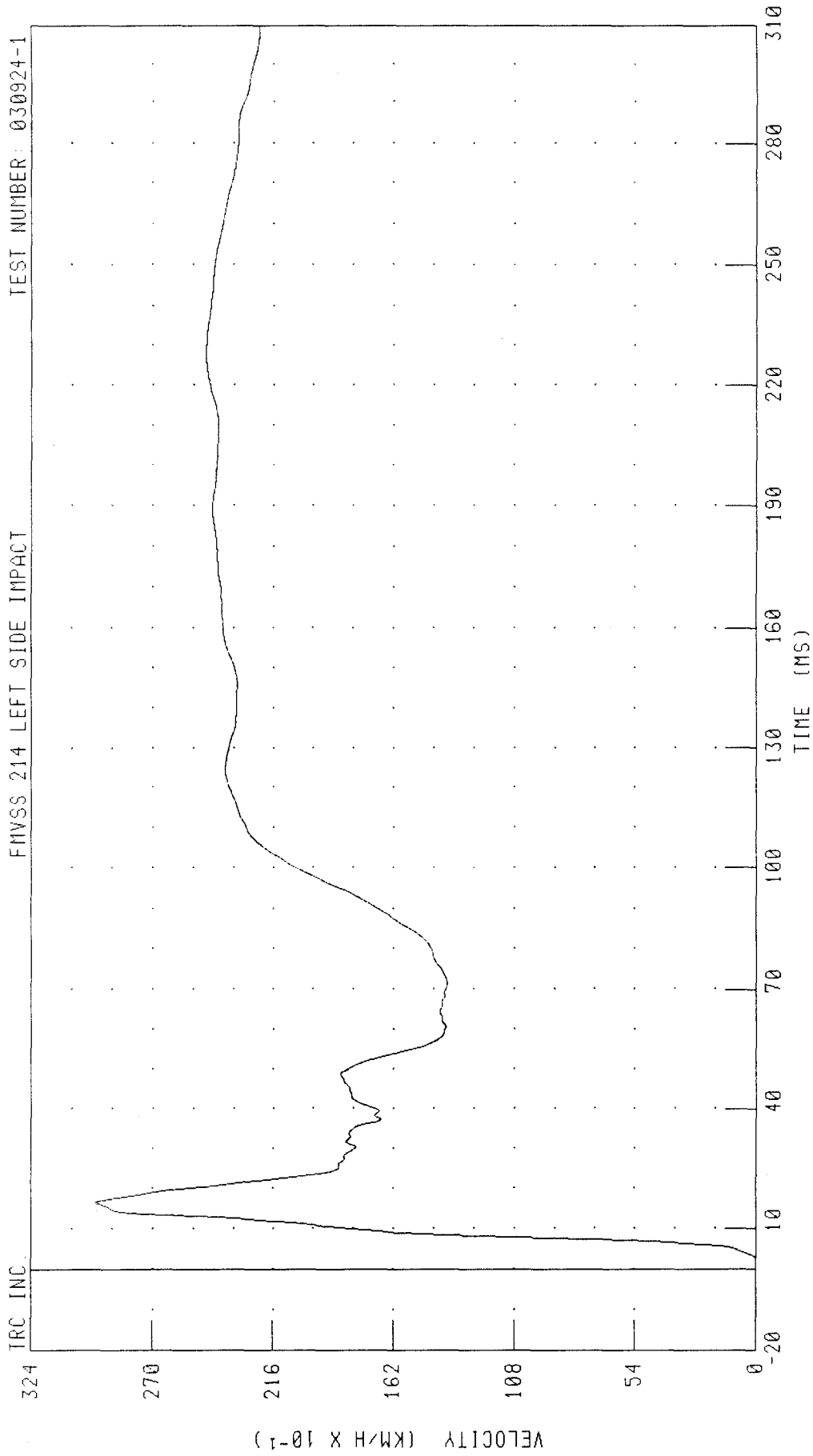
CHANNEL: LMBYC1 FILTER: CH CLASS 60
PEAK DATA 114.21 G @ 7.92 MS, -47.27 G @ 20.72 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

LEFT MIDDLE B-POST Y-AXIS VELOCITY

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030924-1



PEAK DATA: 29 53 KM/H @ 16 40 MS, 0 00 KM/H @ 0 00 MS

CHANNEL: LMBYV1 FILTER: CH CLASS: 180

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

LEFT FRONT SEAT TRACK Y-AXIS ACCELERATION

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

TRC INC.

91

64

37

10

-17

-44

-71

ACCELERATION (G)

TIME (MS)

310

280

250

220

190

160

130

100

70

40

10

-20

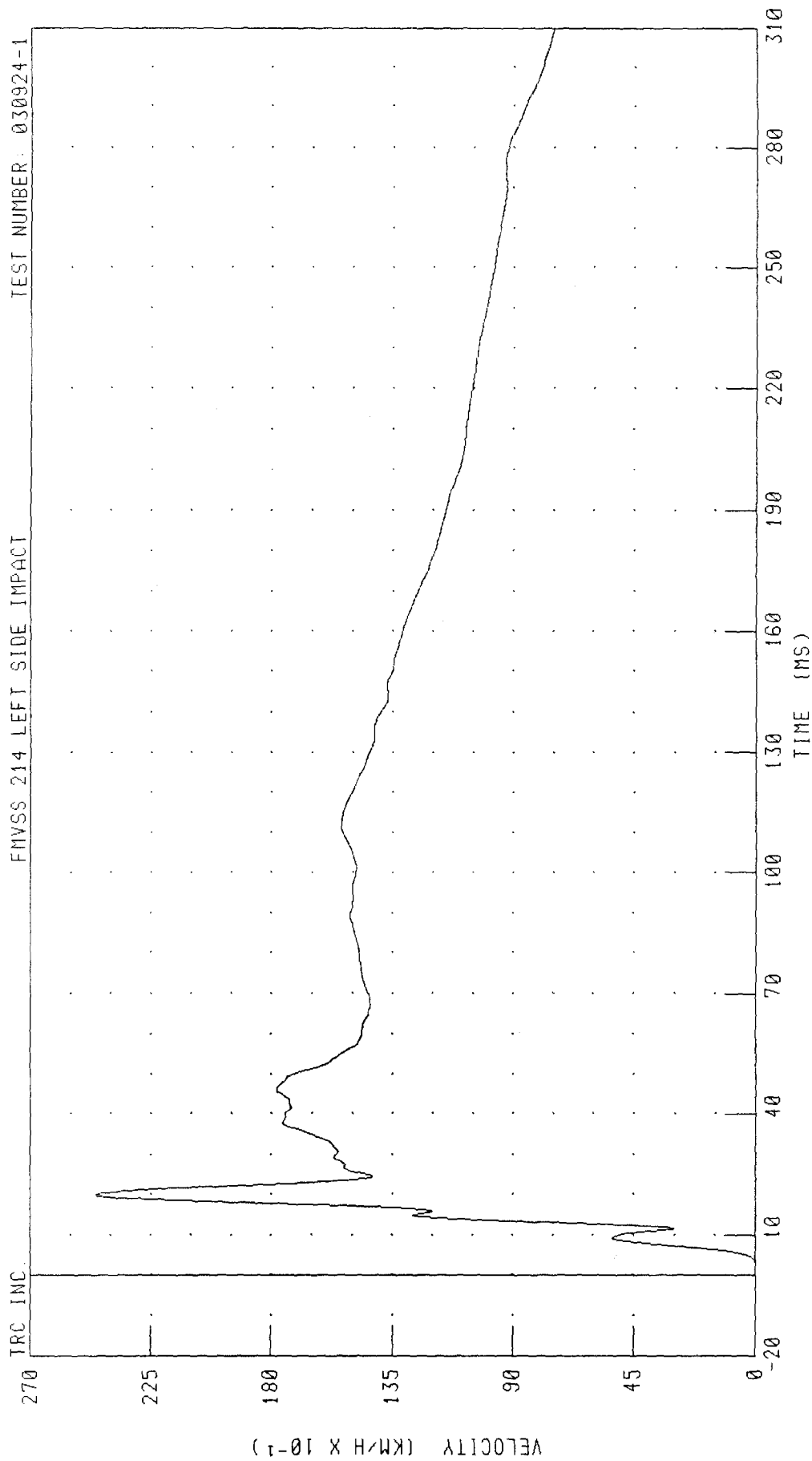
CHANNEL: LFTYC1 FILTER: CH. CLASS 60

PEAK DATA: 82 25 G @ 17 52 MS, -65 06 G @ 22 32 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
LEFT FRONT SEAT TRACK Y-AXIS VELOCITY

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030924-1



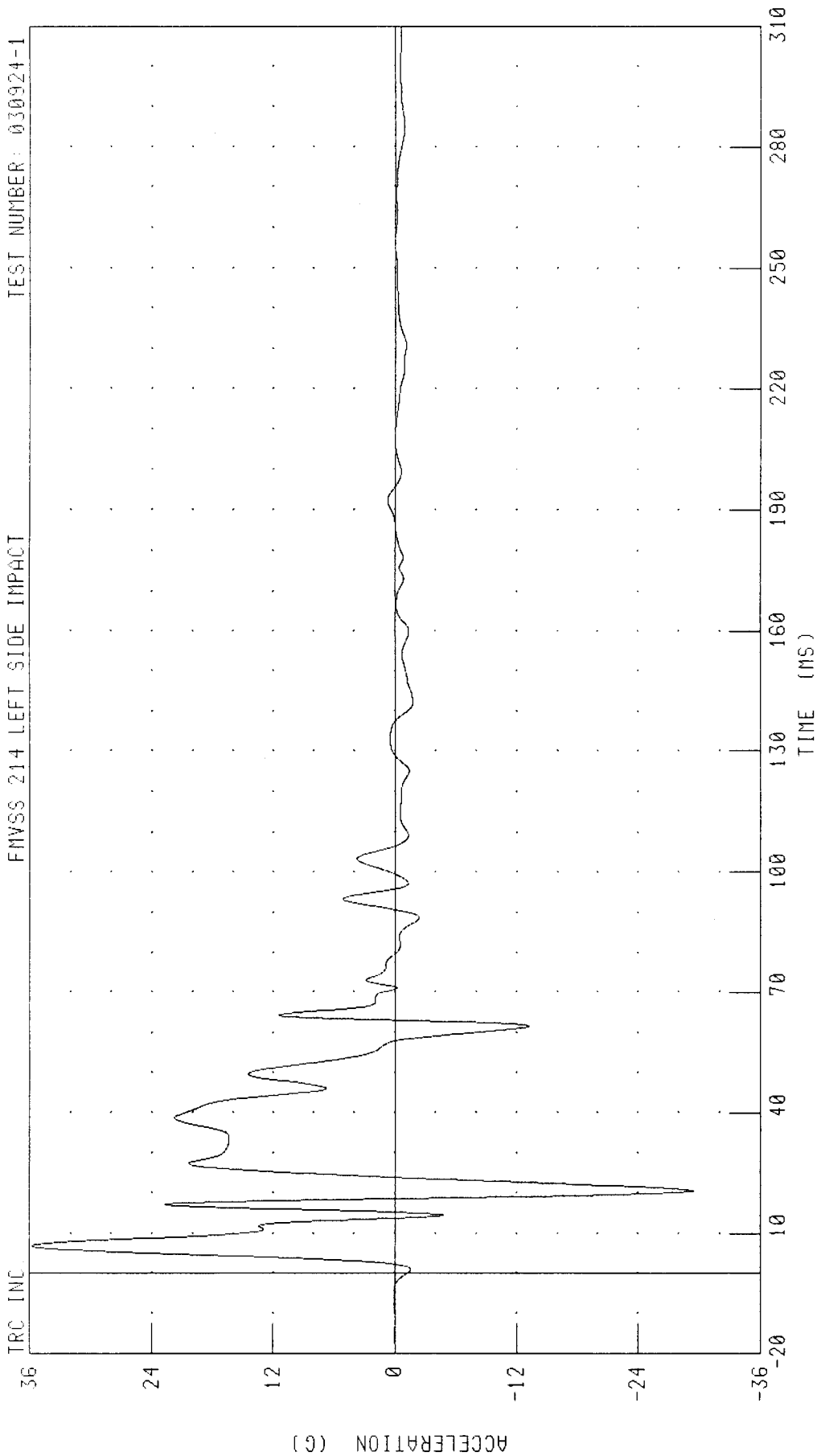
CHANNEL: LFTYV1 FILTER: CH. CLASS 180

PEAK DATA: 24.59 KM/H @ 19.84 MS; 0.00 KM/H @ 0.00 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

LEFT REAR SEAT TRACK Y-AXIS ACCELERATION

TRC INC FMVSS 214 LEFT SIDE IMPACT TEST NUMBER: 030924-1



CHANNEL: LRTYC1 FILTER: CH CLASS 60

PEAK DATA: 35.77 G @ 7.04 MS, -29.49 G @ 20.56 MS

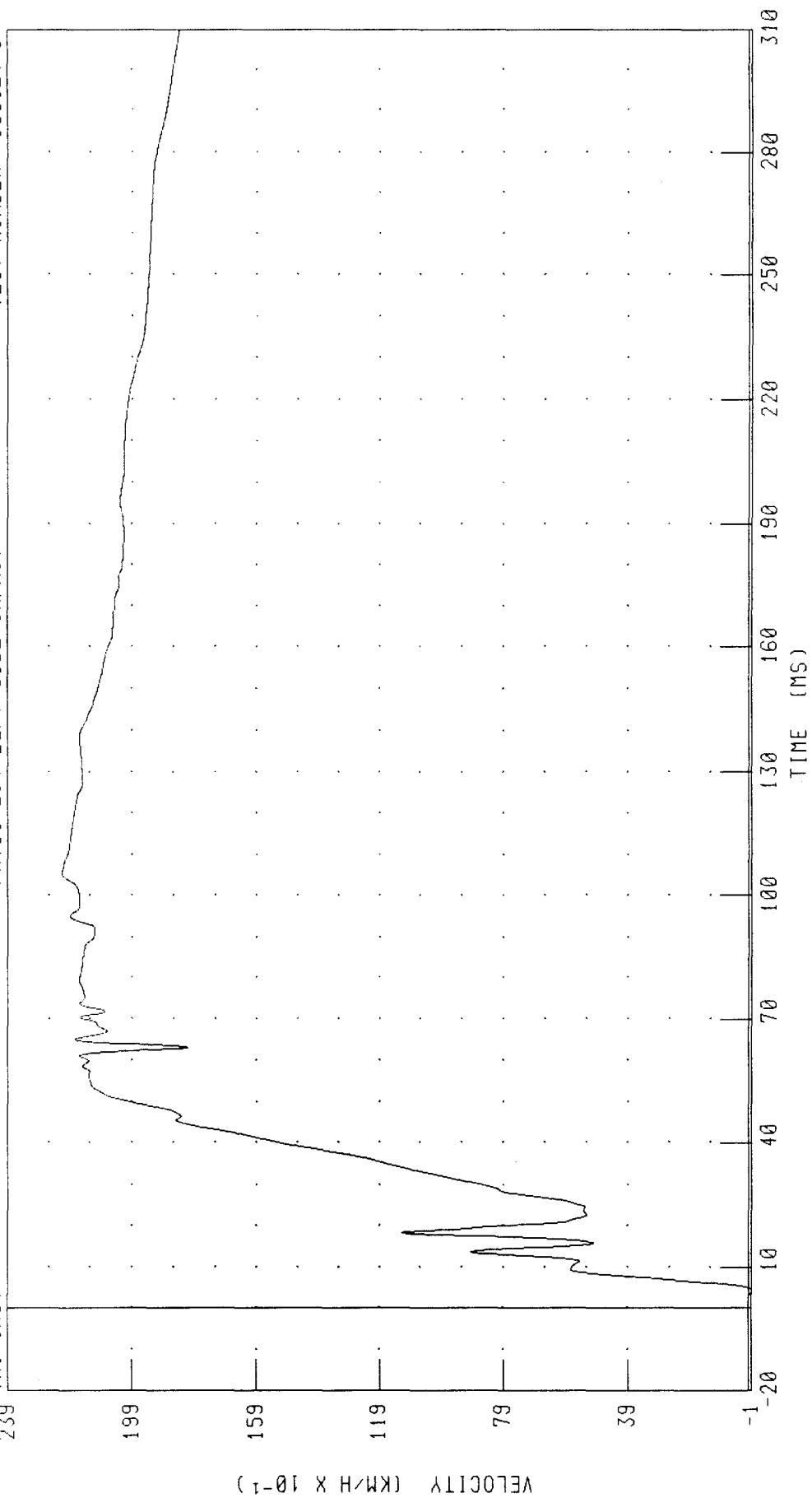
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

LEFT REAR SEAT TRACK Y-AXIS VELOCITY

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

TRC INC.



TIME (MS)

PEAK DATA: 22.15 KM/H @ 105.52 MS, -0.12 KM/H @ 4.24 MS

CHANNEL: LRTYV1 FILTER: CH CLASS 180

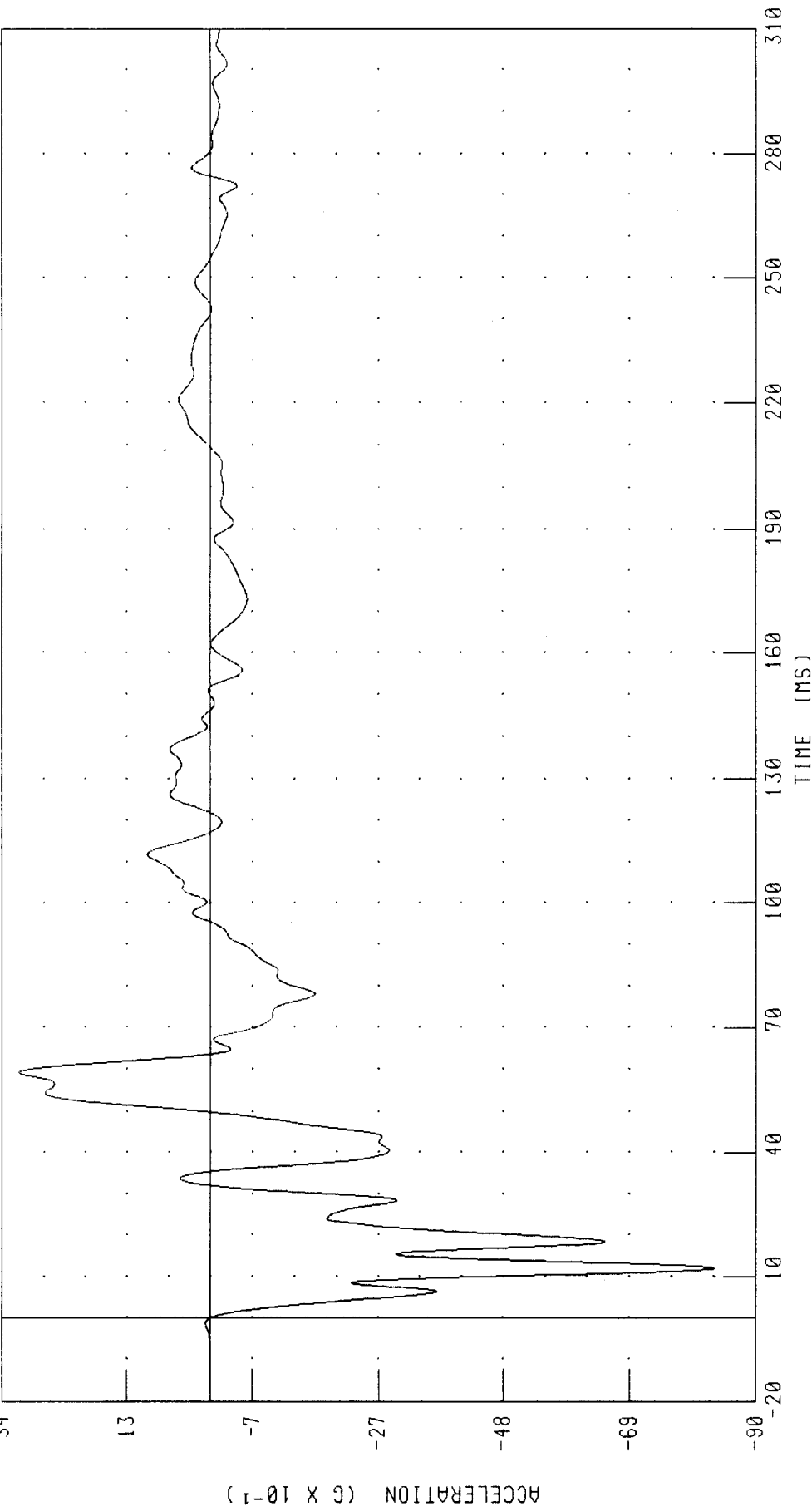
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

VEHICLE CENTER OF GRAVITY X-AXIS ACCELERATION

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

TRC INC.

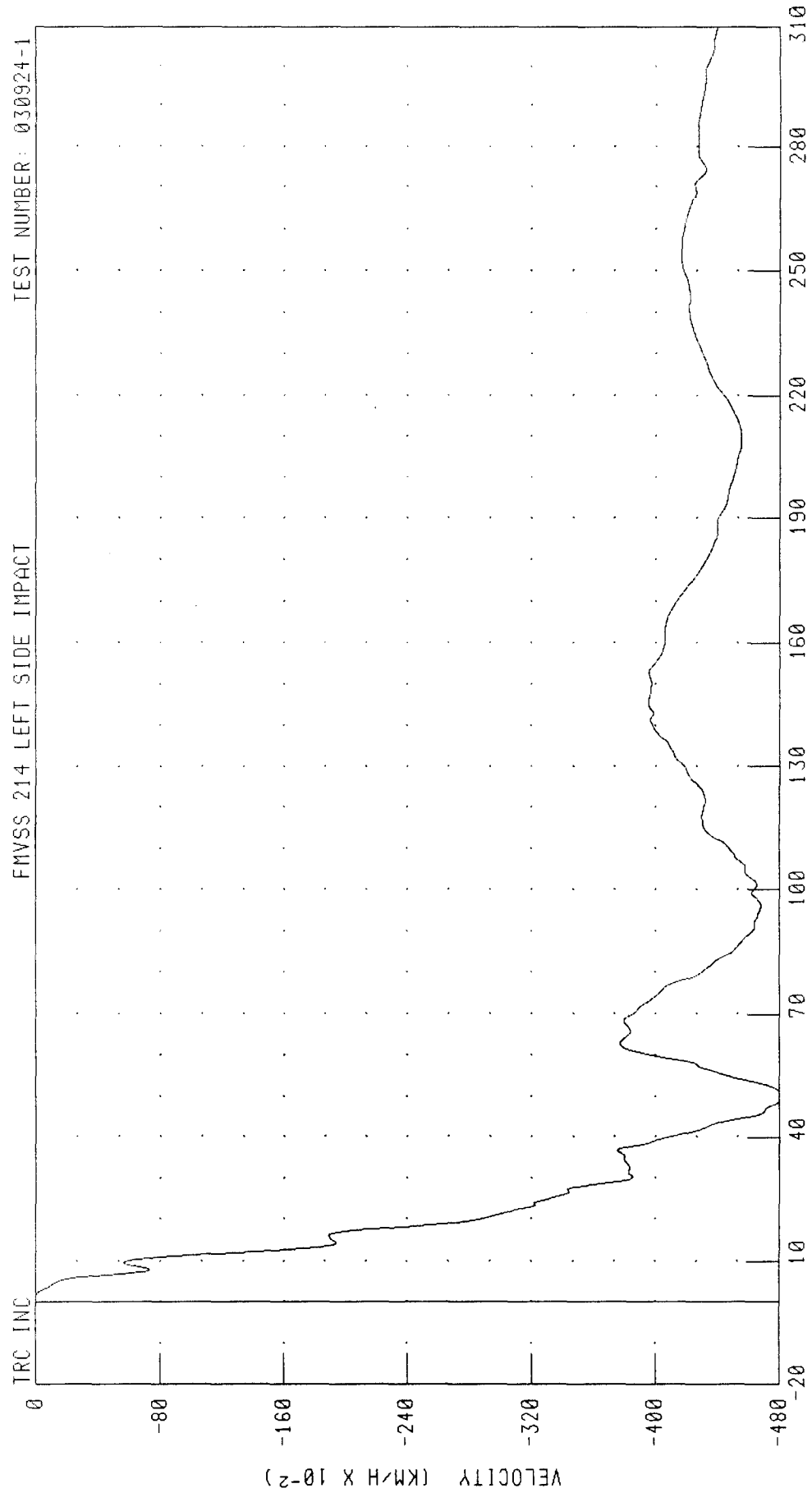


CHANNEL: VCCXG1 FILTER: CH CLASS 60

PEAK DATA 3 21 G @ 59 20 MS, -8 41 G @ 12 00 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

VEHICLE CENTER OF GRAVITY X-AXIS VELOCITY



CHANNEL: VCGXV1 FILTER: CH. CLASS 180 PEAK DATA: 0 00 KM/H @ 1 28 MS; -4 82 KM/H @ 50 64 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

VEHICLE CENTER OF GRAVITY Y-AXIS ACCELERATION

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

TRC INC.

310

255

ACCELERATION (G X 10⁻¹)

200

145

90

35

-20

TIME (MS)

CHANNEL: VCCYG1 FILTER: CH. CLASS 60

PEAK DATA: 28 12 G @ 6 48 MS, -1 90 G @ 281 44 MS

310

280

250

220

190

160

130

100

70

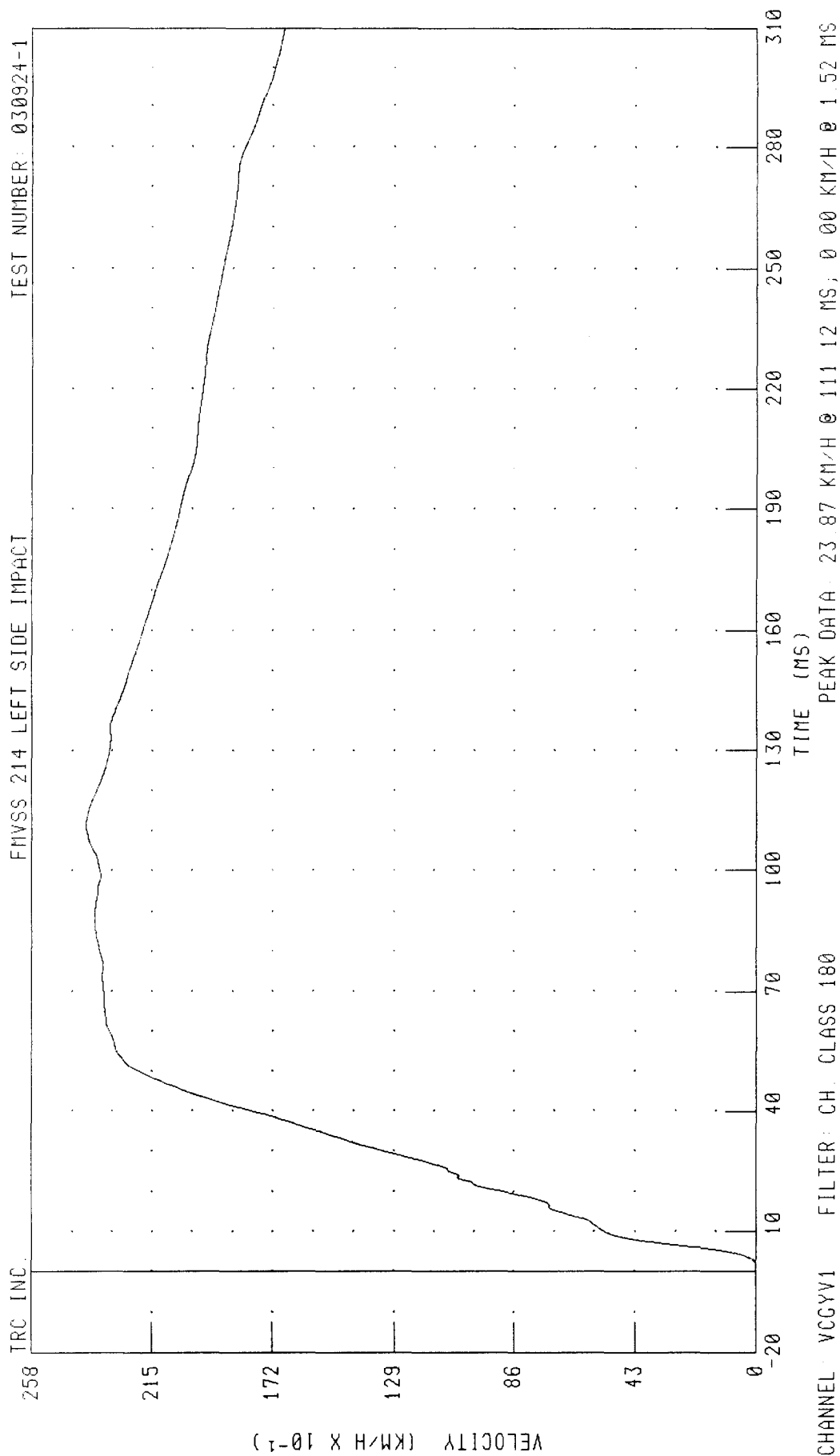
40

10

-20

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

VEHICLE CENTER OF GRAVITY Y-AXIS VELOCITY

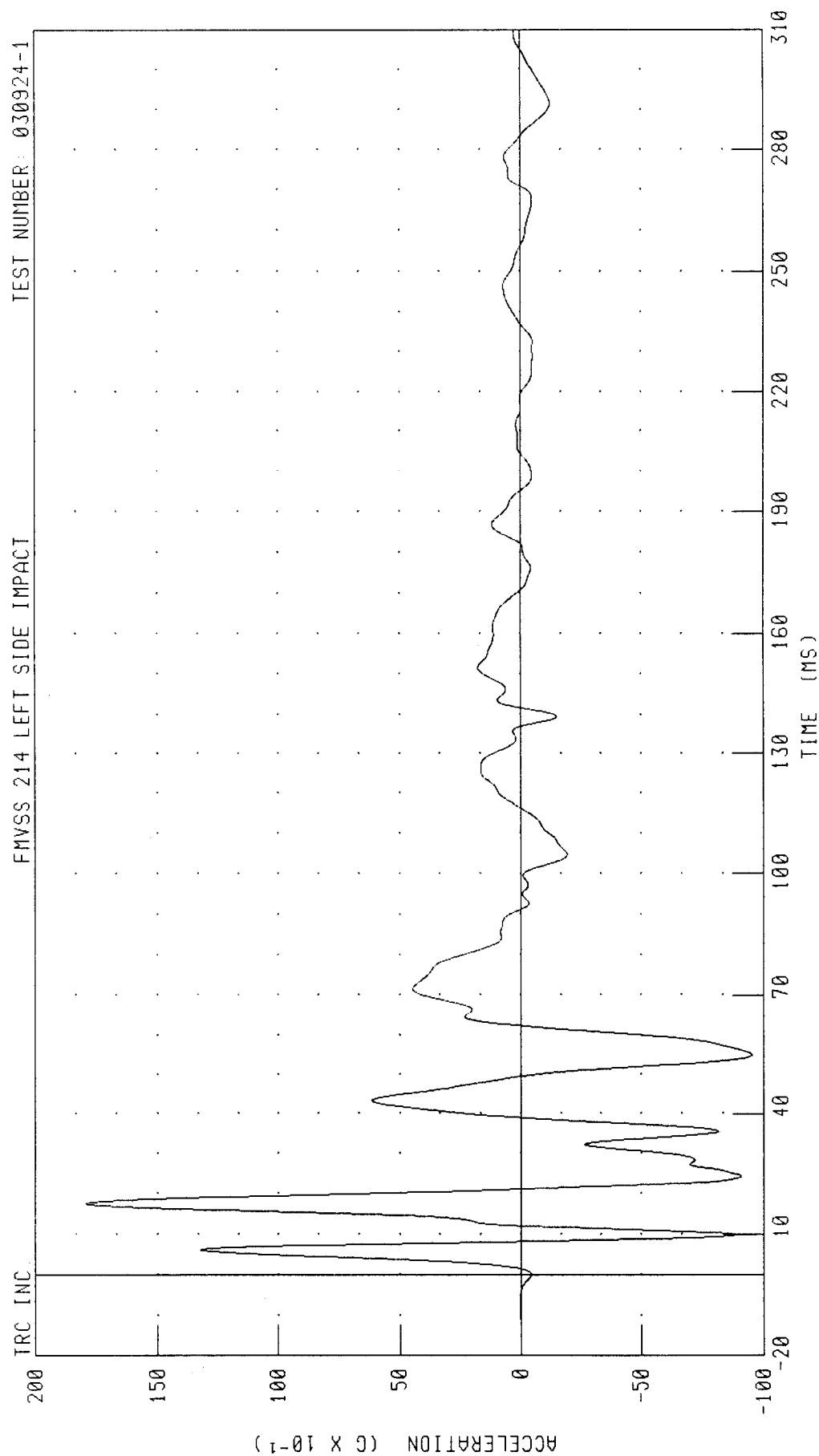


55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

VEHICLE CENTER OF GRAVITY Z-AXIS ACCELERATION

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

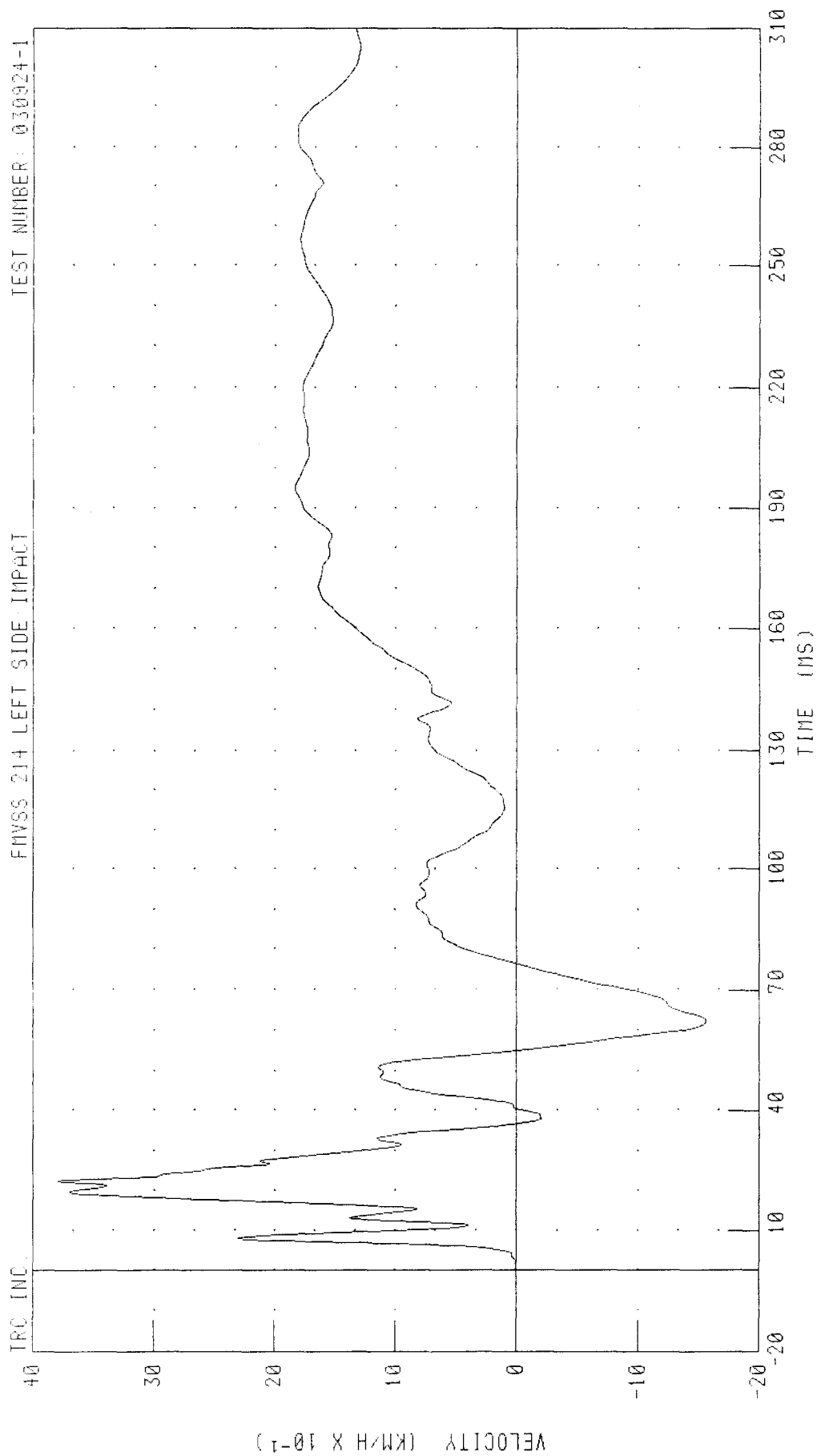


CHANNEL: VCCZG1 FILTER: CH. CLASS 60

PEAK DATA: 17 95 G @ 17 52 MS, -9 53 G @ 54 80 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

VEHICLE CENTER OF GRAVITY Z-AXIS VELOCITY

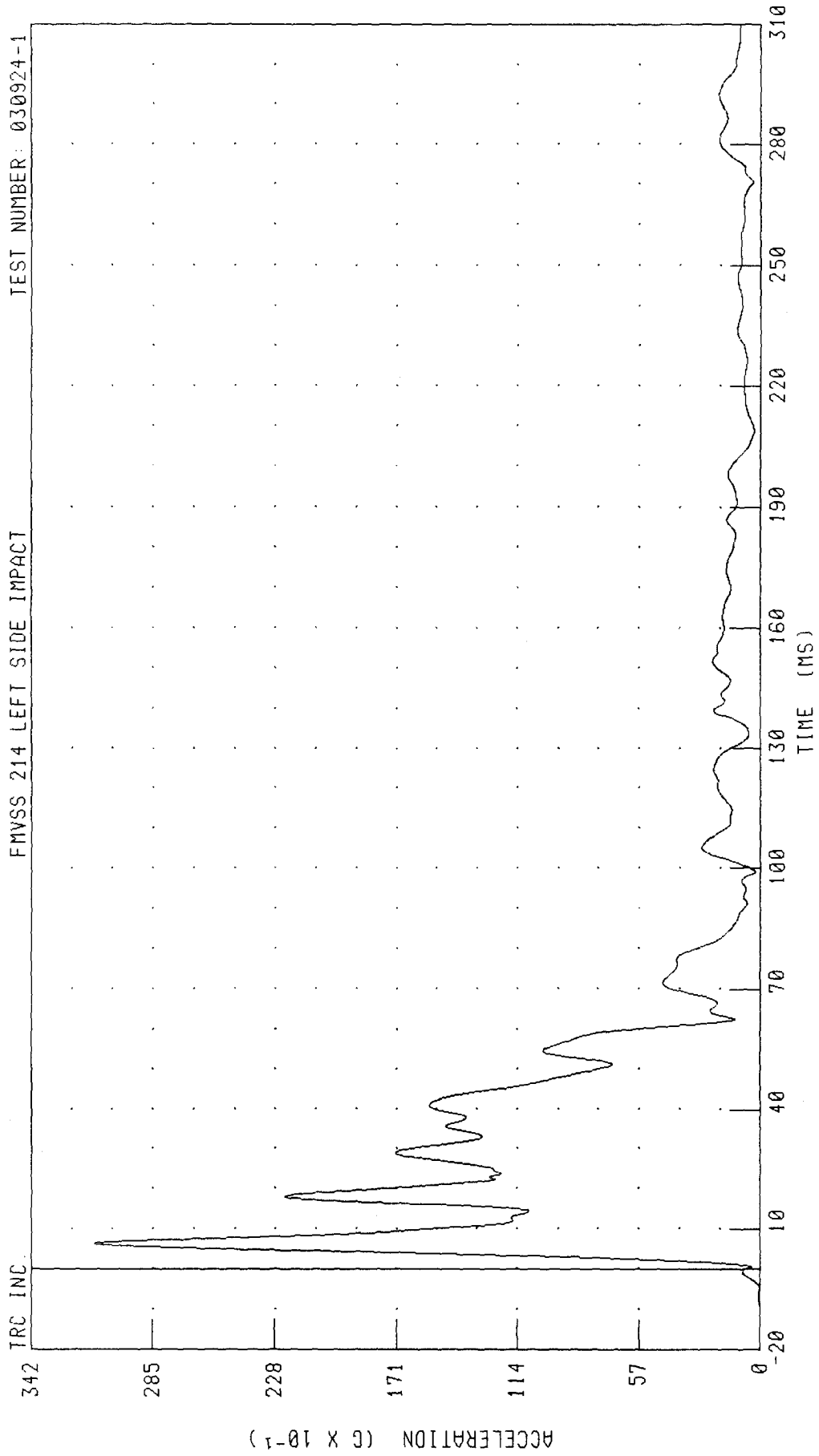


CHANNEL: VCCZV1 FILTER: CH CLASS 180

PEAK DATA: 3.79 KM/H @ 22.40 MS, -1.56 KM/H @ 62.40 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
VEHICLE CENTER OF GRAVITY RESULTANT ACCELERATION

TRC INC. FMVSS 214 LEFT SIDE IMPACT TEST NUMBER: 030924-1



PEAK DATA: 31 26 G @ 6.40 MS, 0 00 G @ -11 84 MS

CHANNEL: VCCRC1 FILTER: CH. CLASS 60

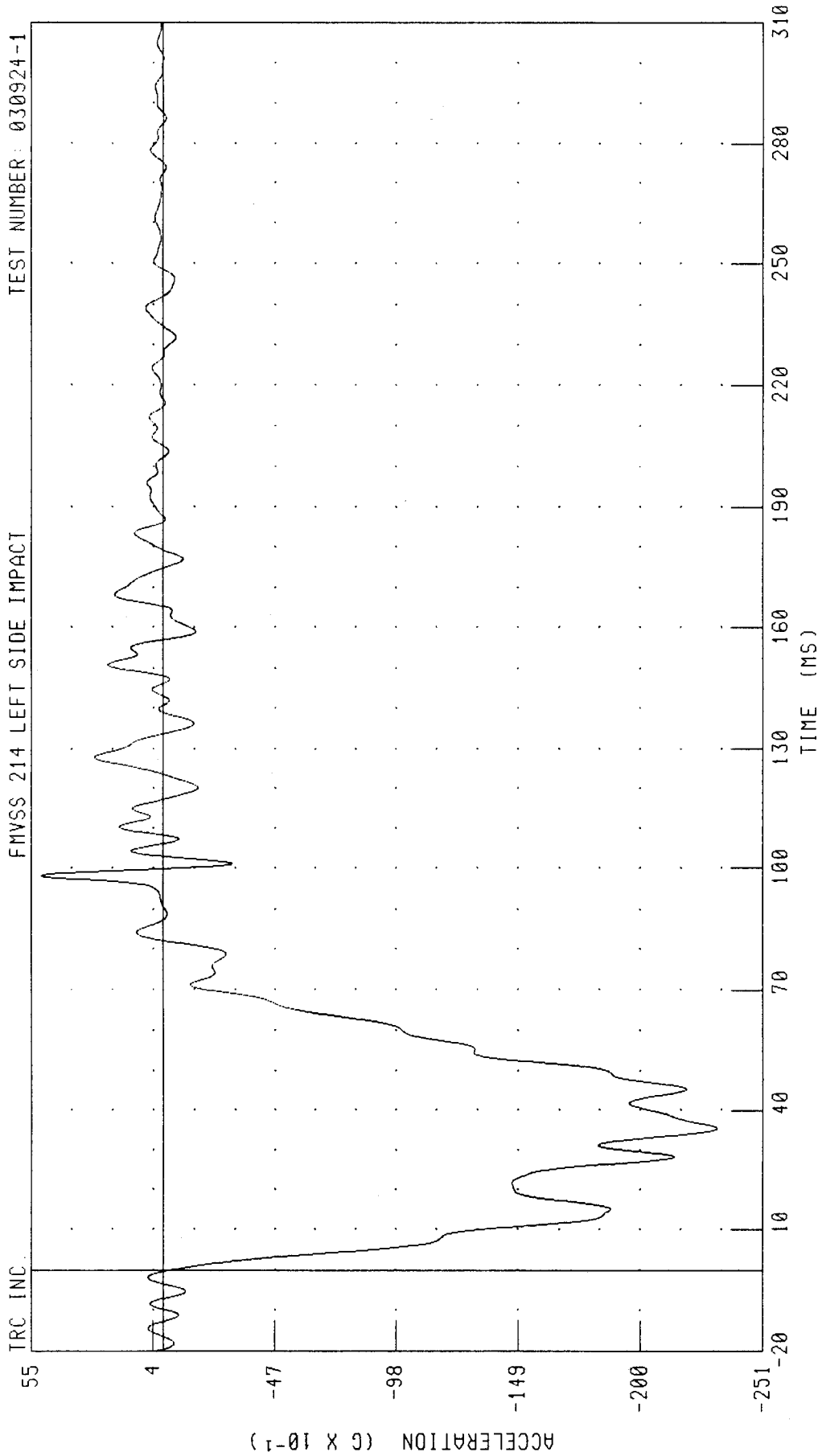
MDB Instrumentation Plots
Acceleration Data - Filter Class 60
Integration Data - Filter Class 180

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

MOB CENTER OF GRAVITY X-AXIS ACCELERATION

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

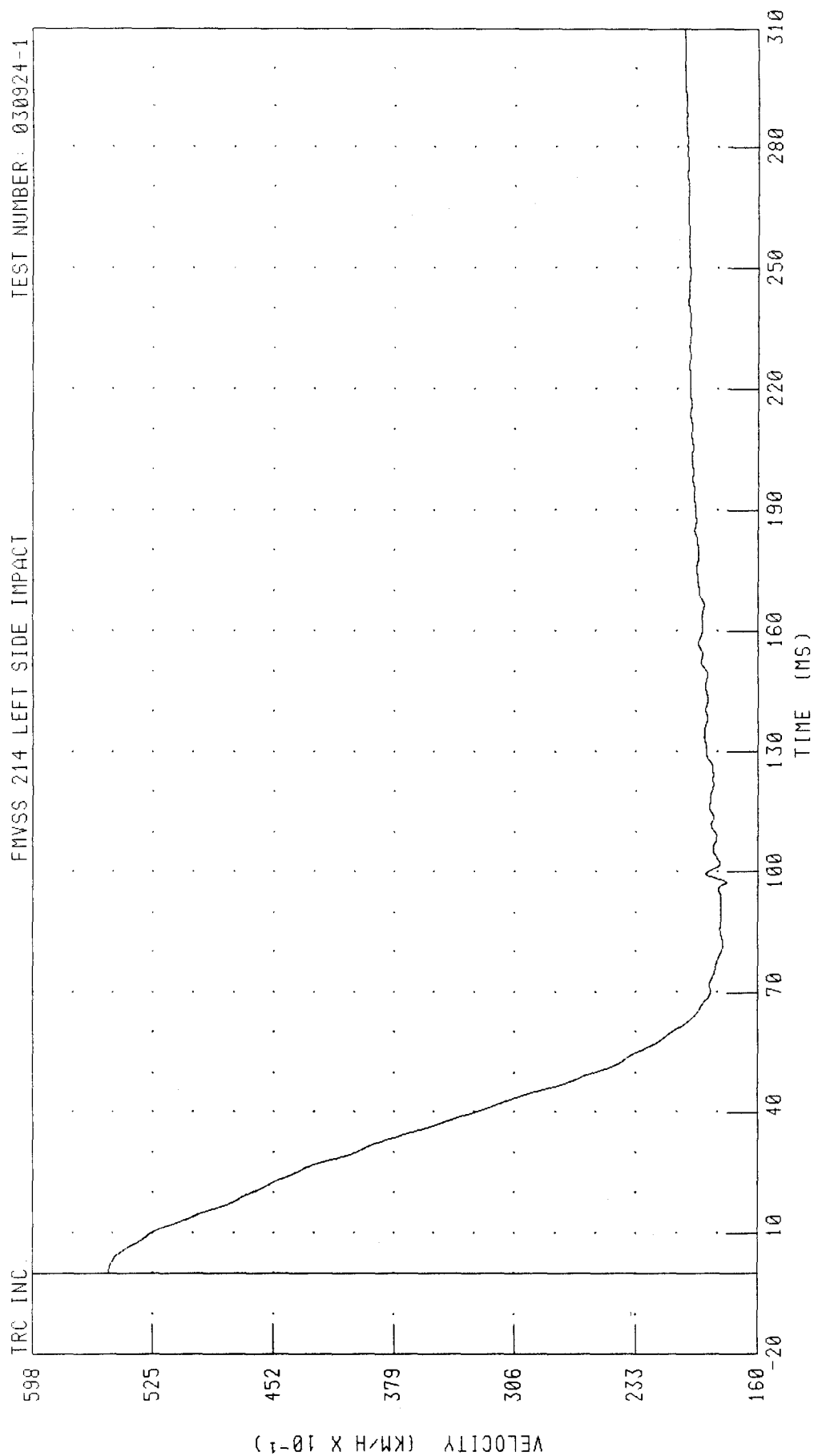


CHANNEL: BCGXG1 FILTER: CH. CLASS 60

PEAK DATA: 5 07 0 98 16 MS, -23 23 0 35 44 MS

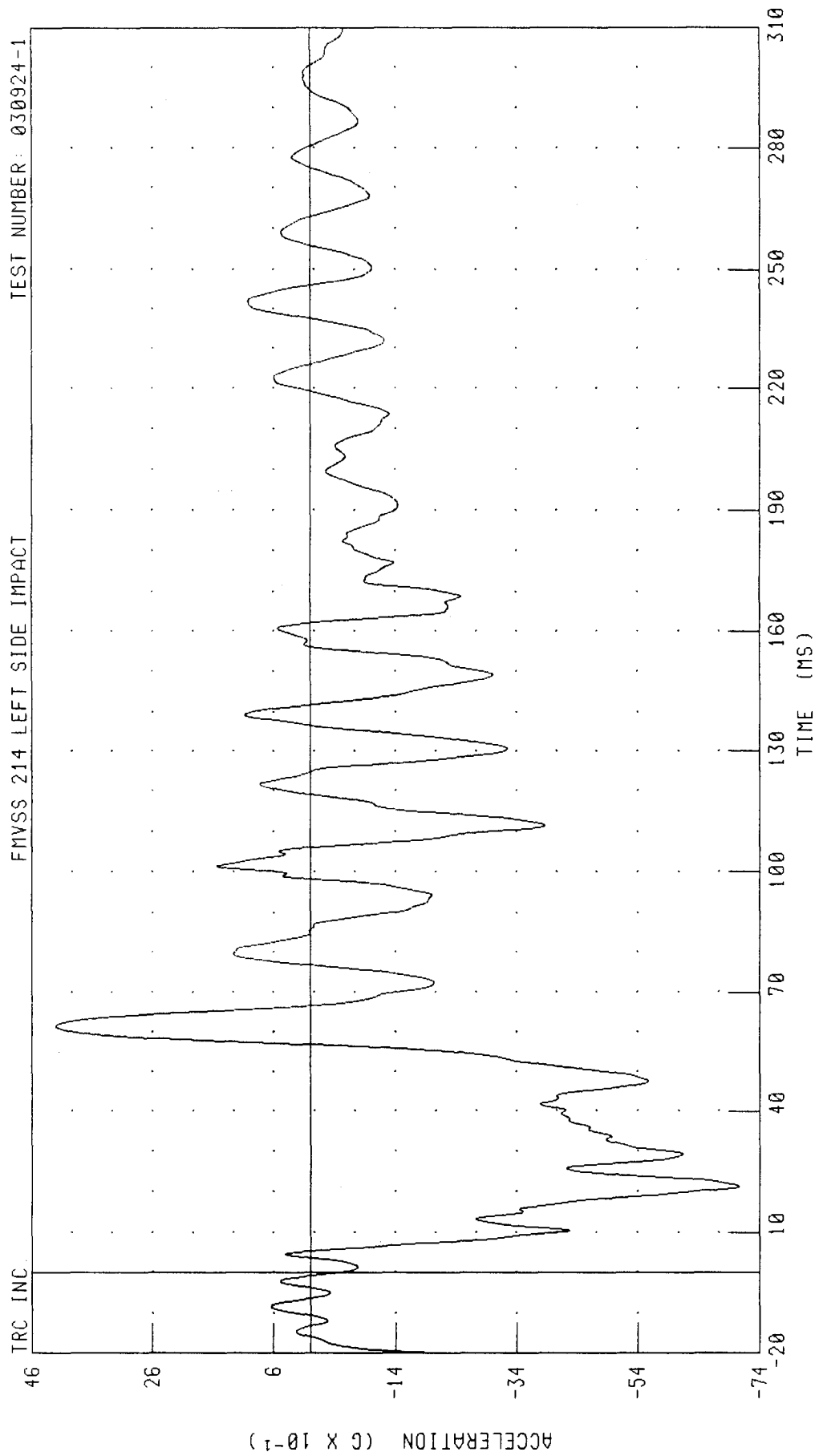
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

MDB CENTER OF GRAVITY X-AXIS VELOCITY



CHANNEL: BCCXV1 FILTER: CH CLASS 180

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
MDB CENTER OF GRAVITY Y-AXIS ACCELERATION



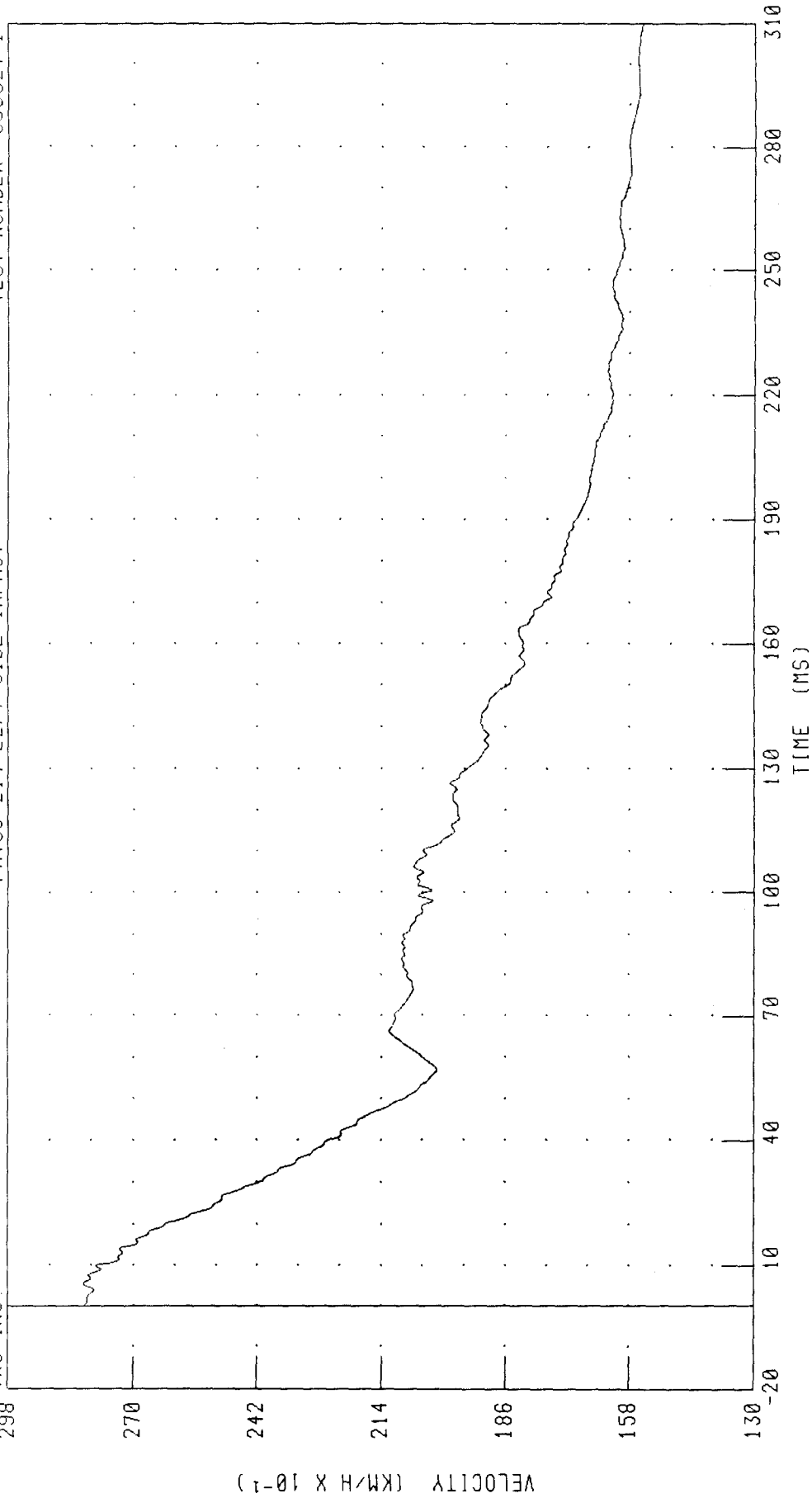
CHANNEL: BCCYG1 FILTER: CH CLASS 60

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
MDB CENTER OF GRAVITY Y-AXIS VELOCITY

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

TRC INC.

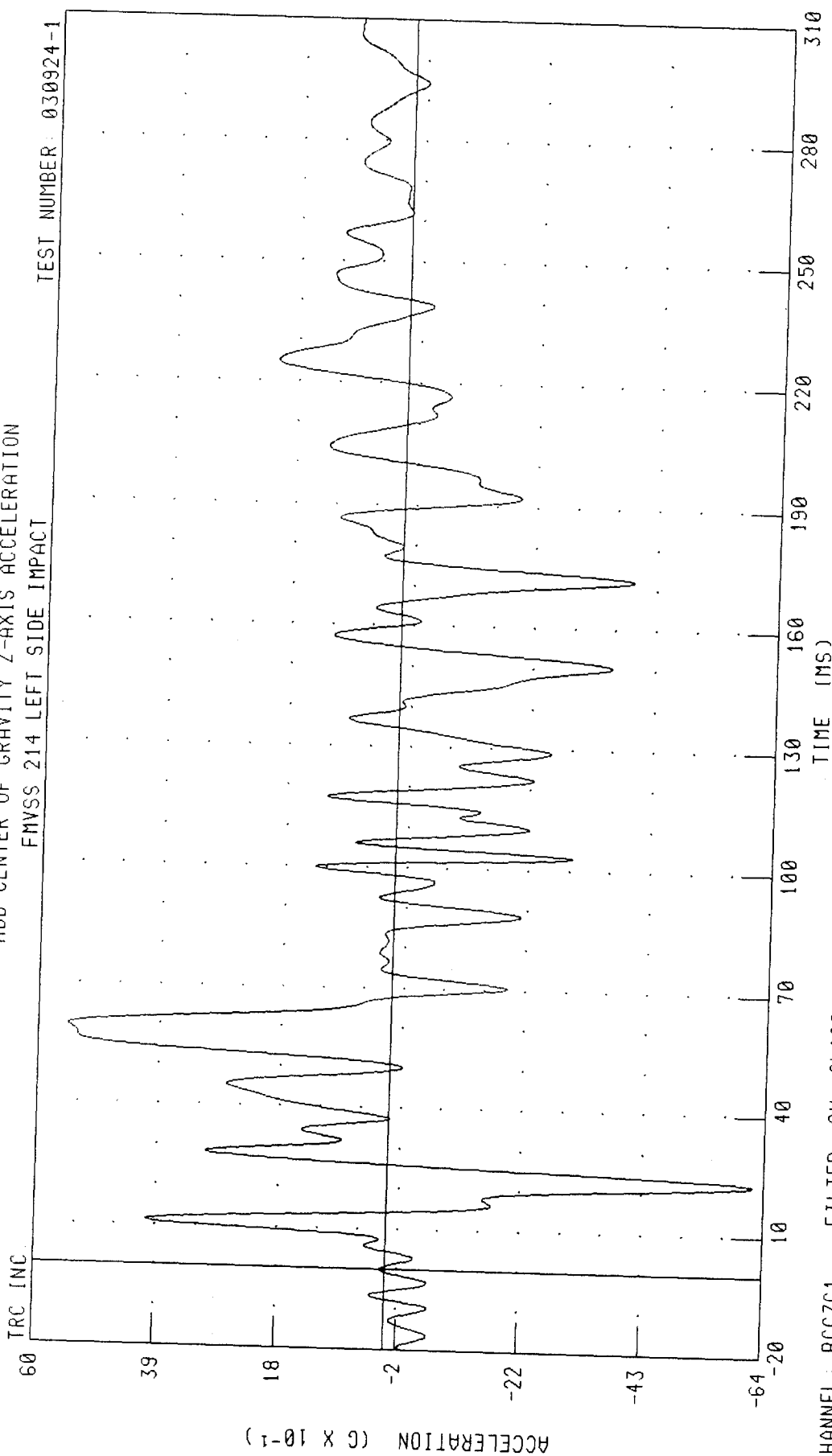


PEAK DATA: 28 10 KM/H @ 5.44 MS, 15.48 KM/H @ 310.00 MS

CHANNEL: BCGYV1 FILTER: CH. CLASS 180

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
MOB CENTER OF GRAVITY Z-AXIS ACCELERATION
FMVSS 214 LEFT SIDE IMPACT

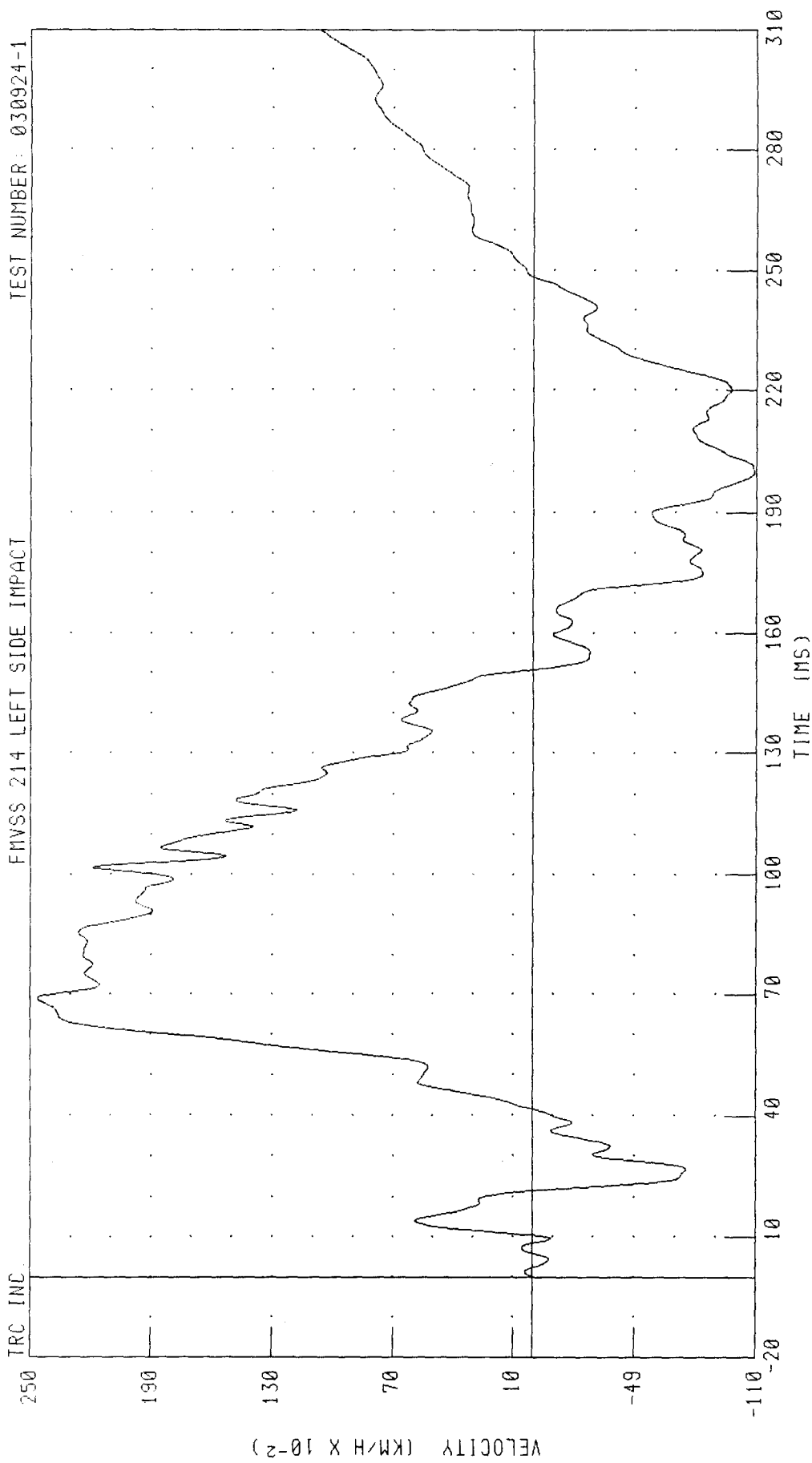
TEST NUMBER: 030924-1



CHANNEL: BCGZG1 FILTER: CH CLASS 60

PEAK DATA 5 59 0 59.52 MS, -6.31 G @ 22.40 MS

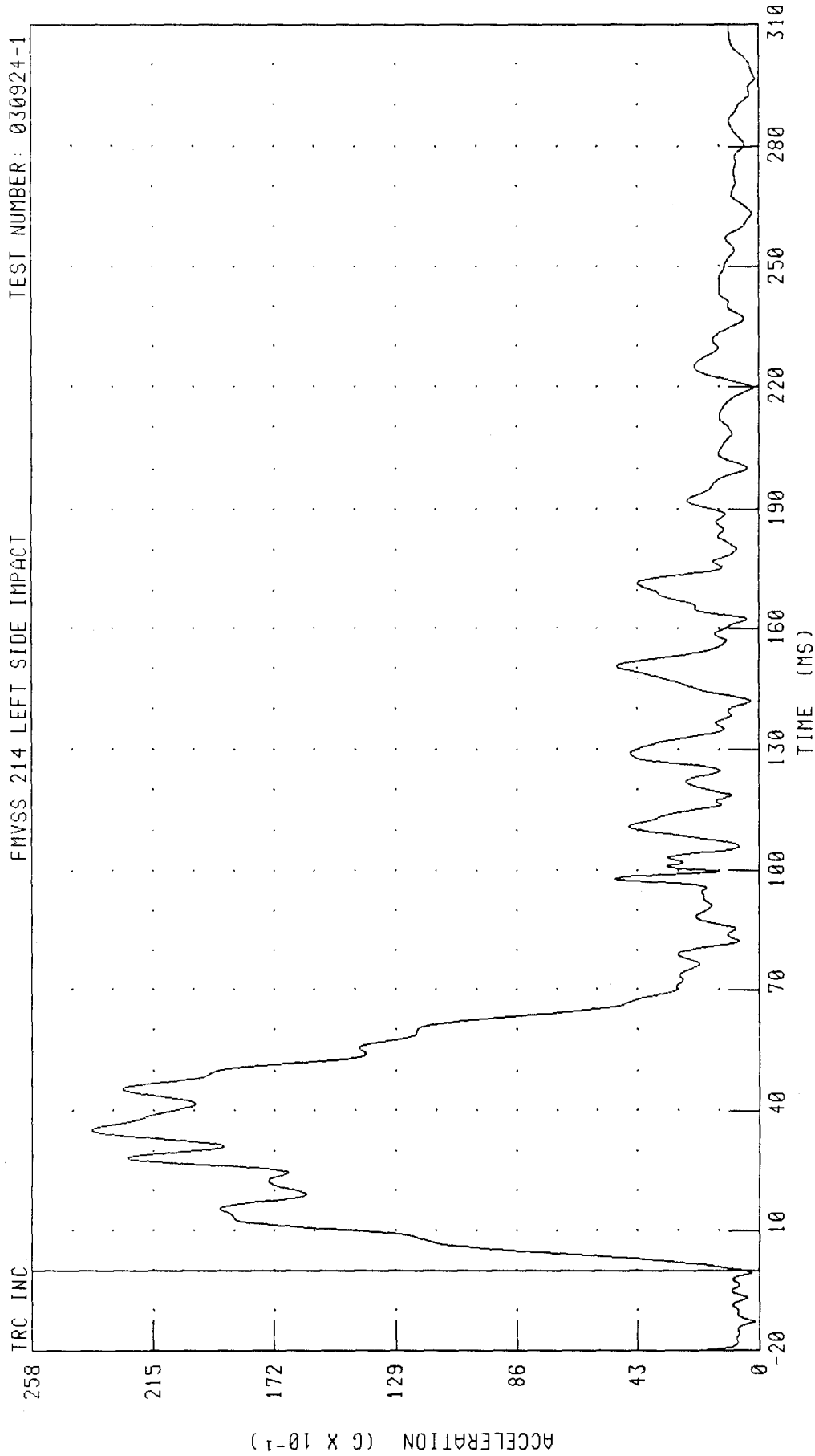
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
MOB CENTER OF GRAVITY Z-AXIS VELOCITY



CHANNEL: BCGZV1 FILTER: CH. CLASS 180 PEAK DATA: 2 46 KM/H @ 68 96 MS, -1 09 KM/H @ 199 92 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

MOB CENTER OF GRAVITY RESULTANT ACCELERATION

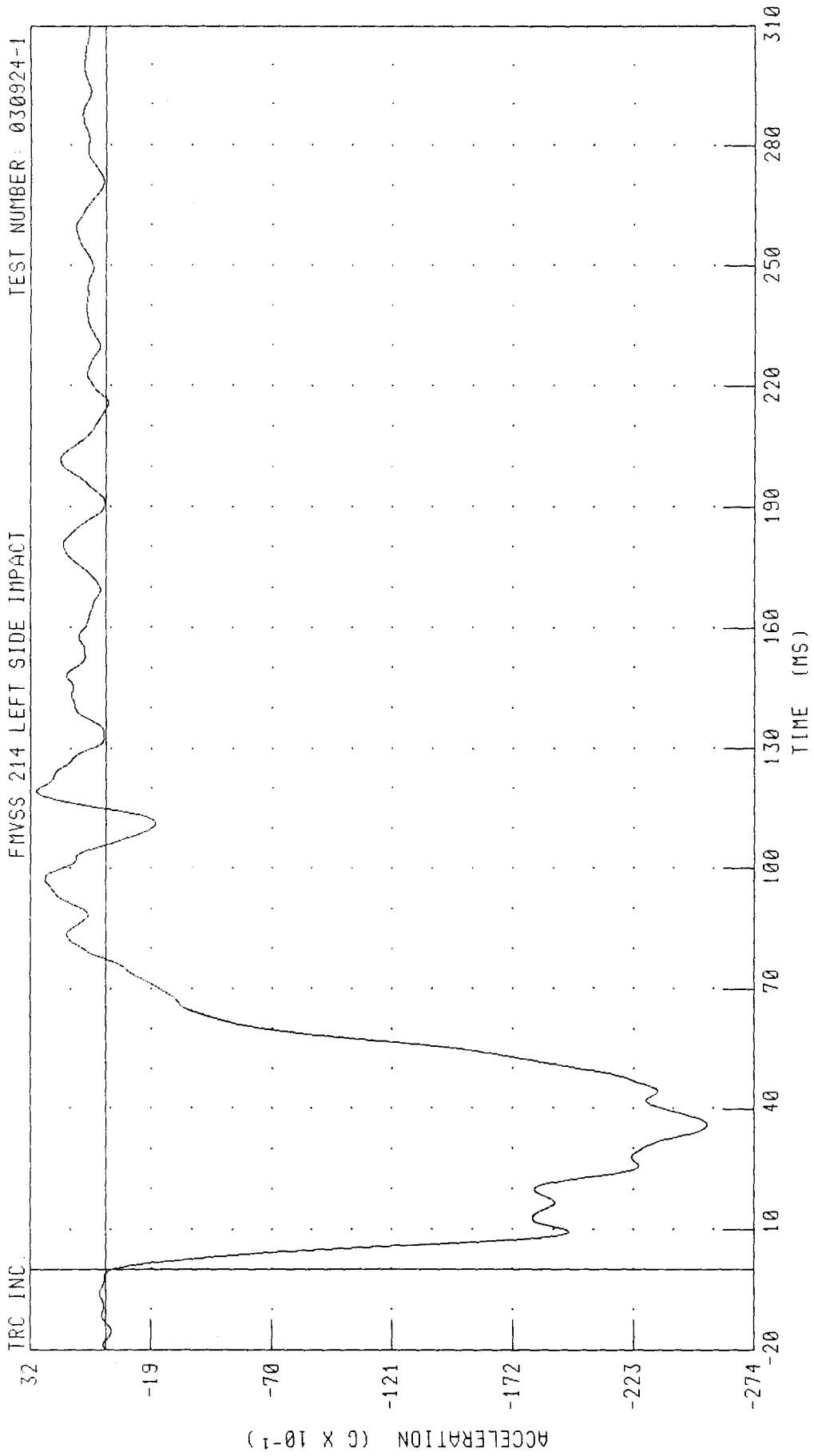


CHANNEL: BCGRG1 FILTER: CH CLASS 60

PEAK DATA: 23.71 G @ 35.36 MS, 0.14 G @ -12.88 MS

55/20 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
MDB LEFT REAR X-AXIS ACCELERATION

TRC INC. FMVSS 214 LEFT SIDE IMPACT TEST NUMBER: 030924-1



CHANNEL LRRXG1 FILTER: CH CLASS 60 PEAK DATA: 2 94 G @ 119 36 MS, -25 41 G @ 35 92 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

MDB LEFT REAR X-AXIS VELOCITY

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

TRC INC

598

520

442

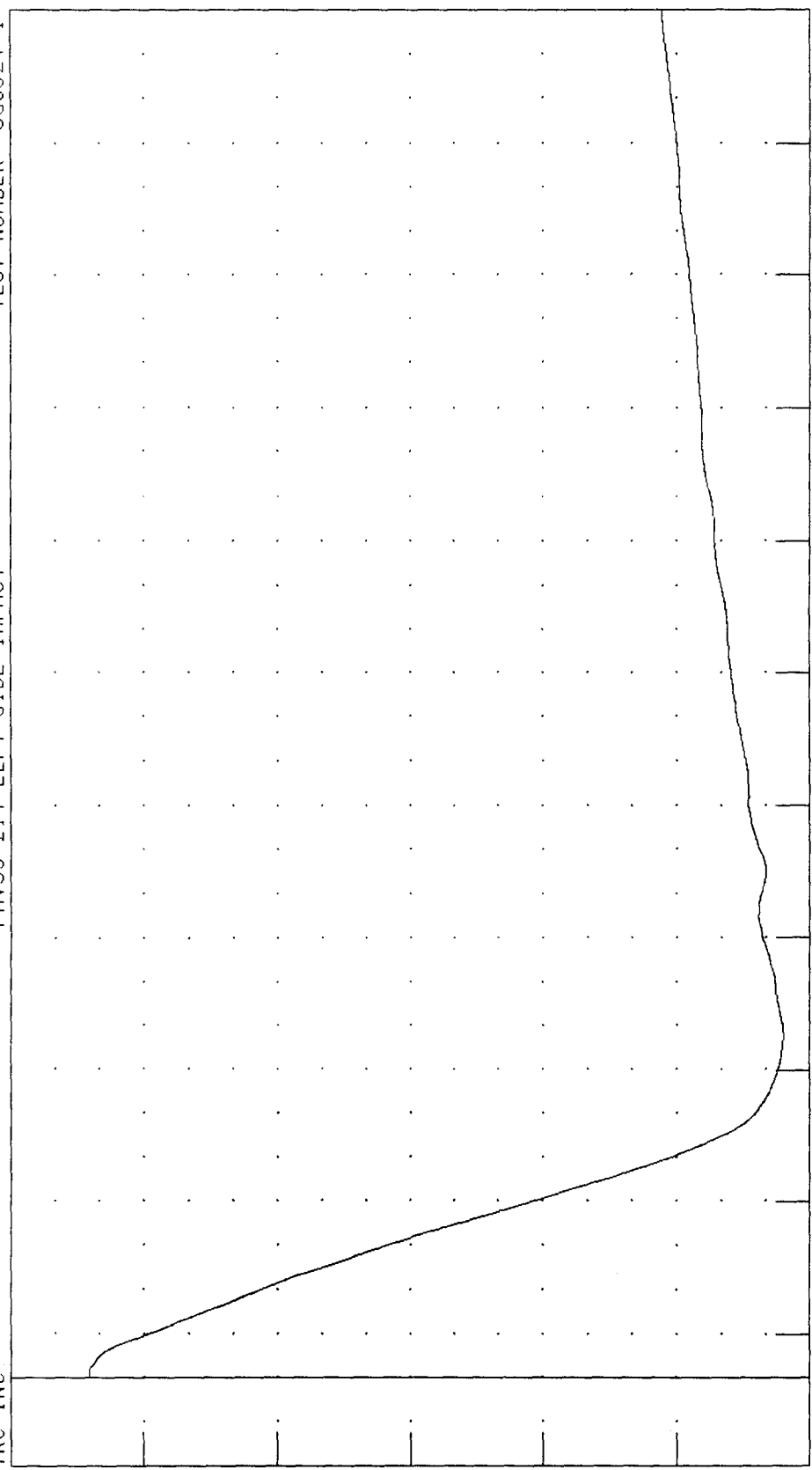
364

286

208

130

VELOCITY (KM/H X 10⁻¹)



TIME (MS)

CHANNEL: LRRXV1 FILTER: CH CLASS 180

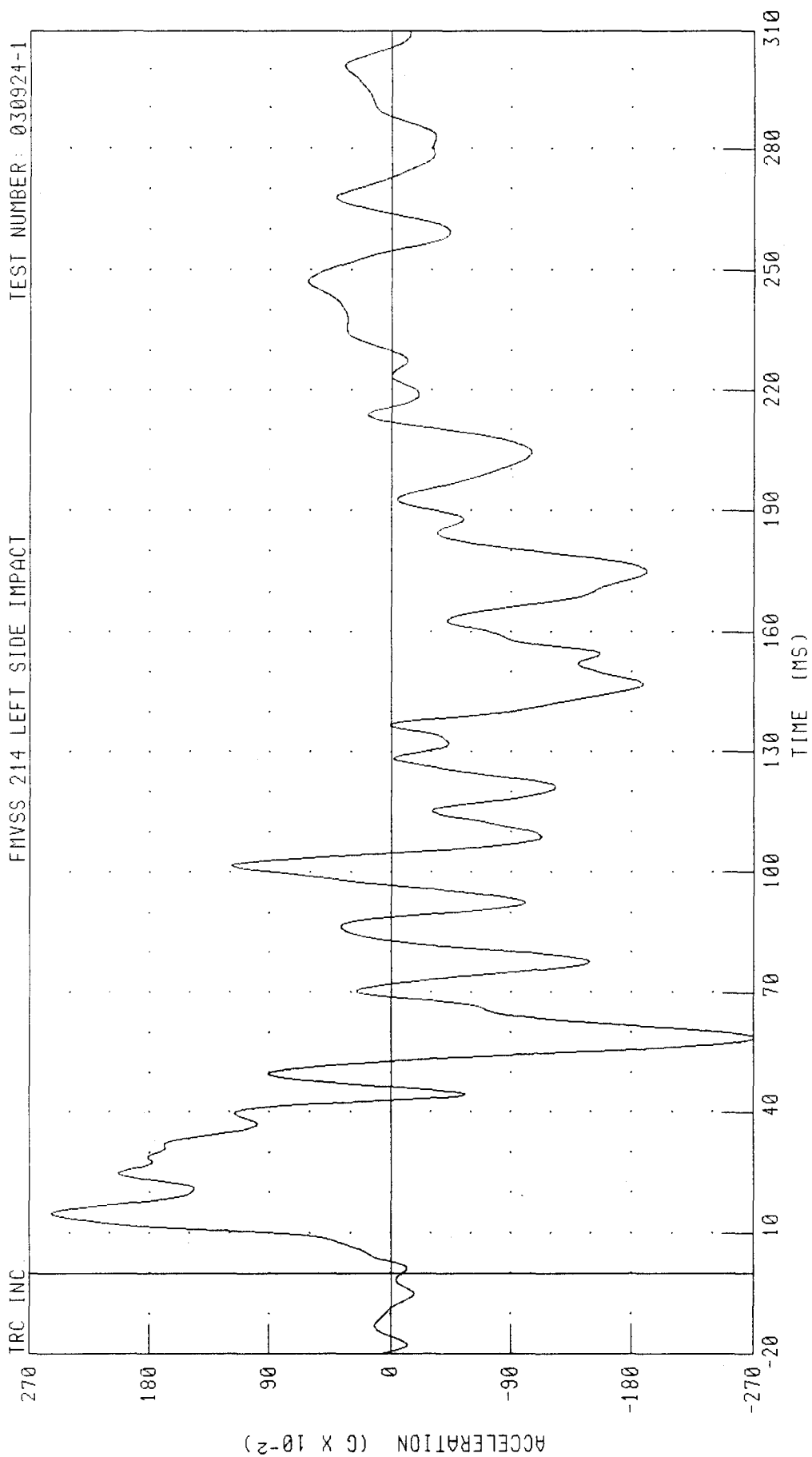
PEAK DATA: 55 22 KM/H @ 1 36 MS, 14 52 KM/H @ 77 52 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

HDB LEFT REAR Y-AXIS ACCELERATION

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030924-1



CHANNEL: LRRY01 FILTER: CH. CLASS 60

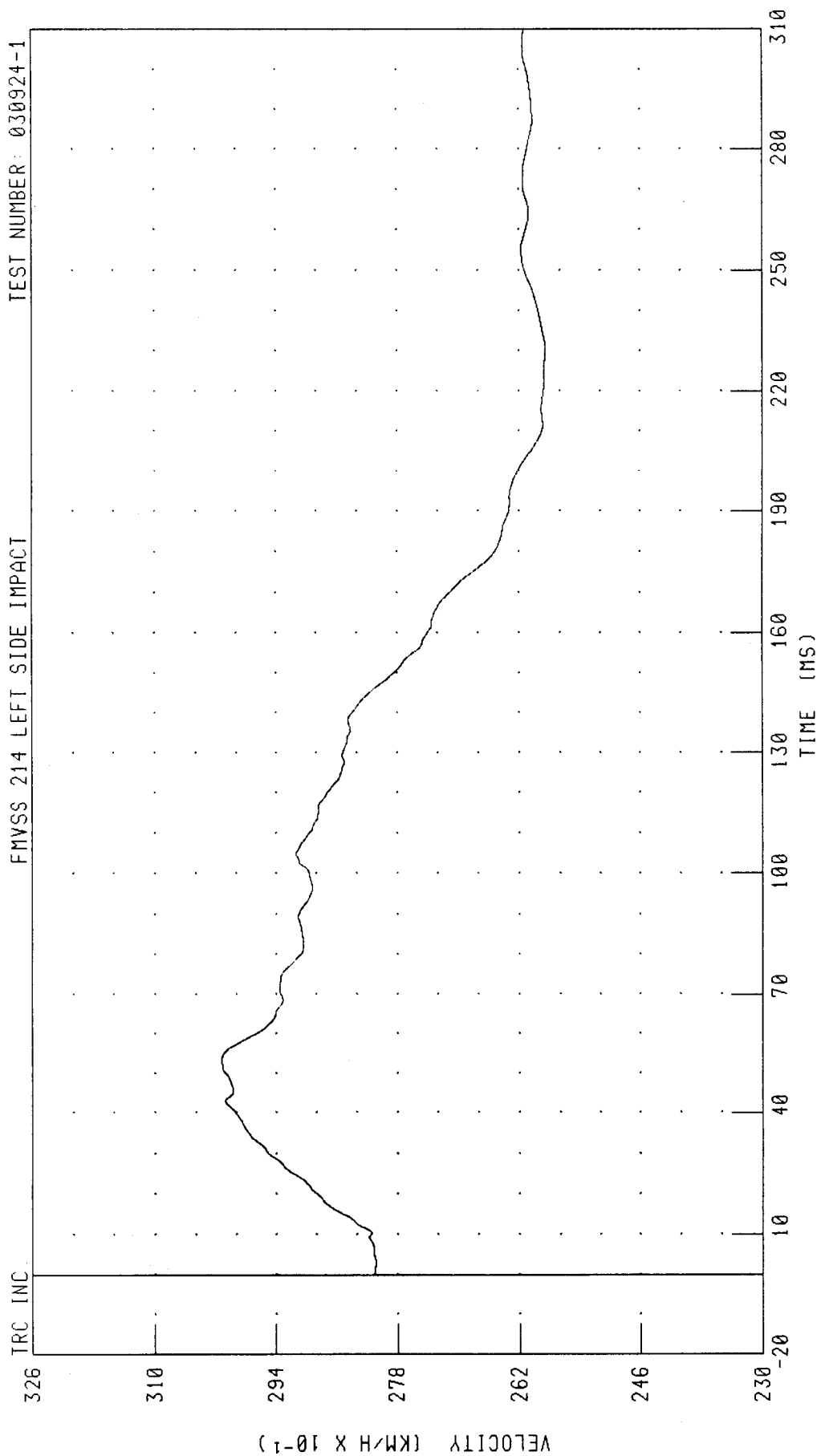
PEAK DATA: 2.53 G @ 14.88 MS, -2.71 G @ 58.72 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

MOB LEFT REAR Y-AXIS VELOCITY

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030924-1



CHANNEL: LRRYV1 FILTER: CH. CLASS 180

PEAK DATA: 30 13 KM/H @ 53 28 MS, 25 85 KM/H @ 230 16 MS

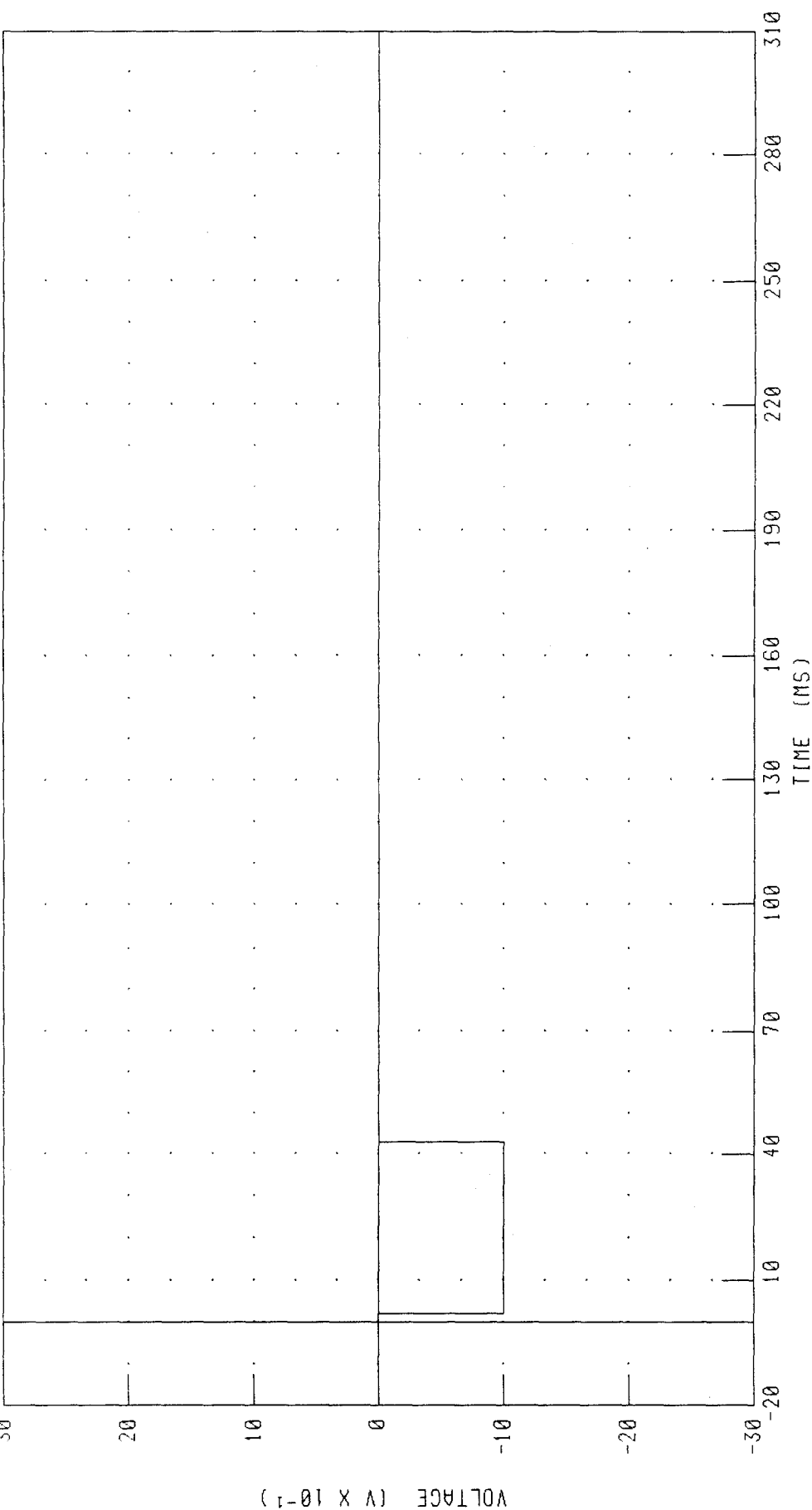
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

MOB RIGHT SIDE CONTACT SWITCH

TRC INC.

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030924-1



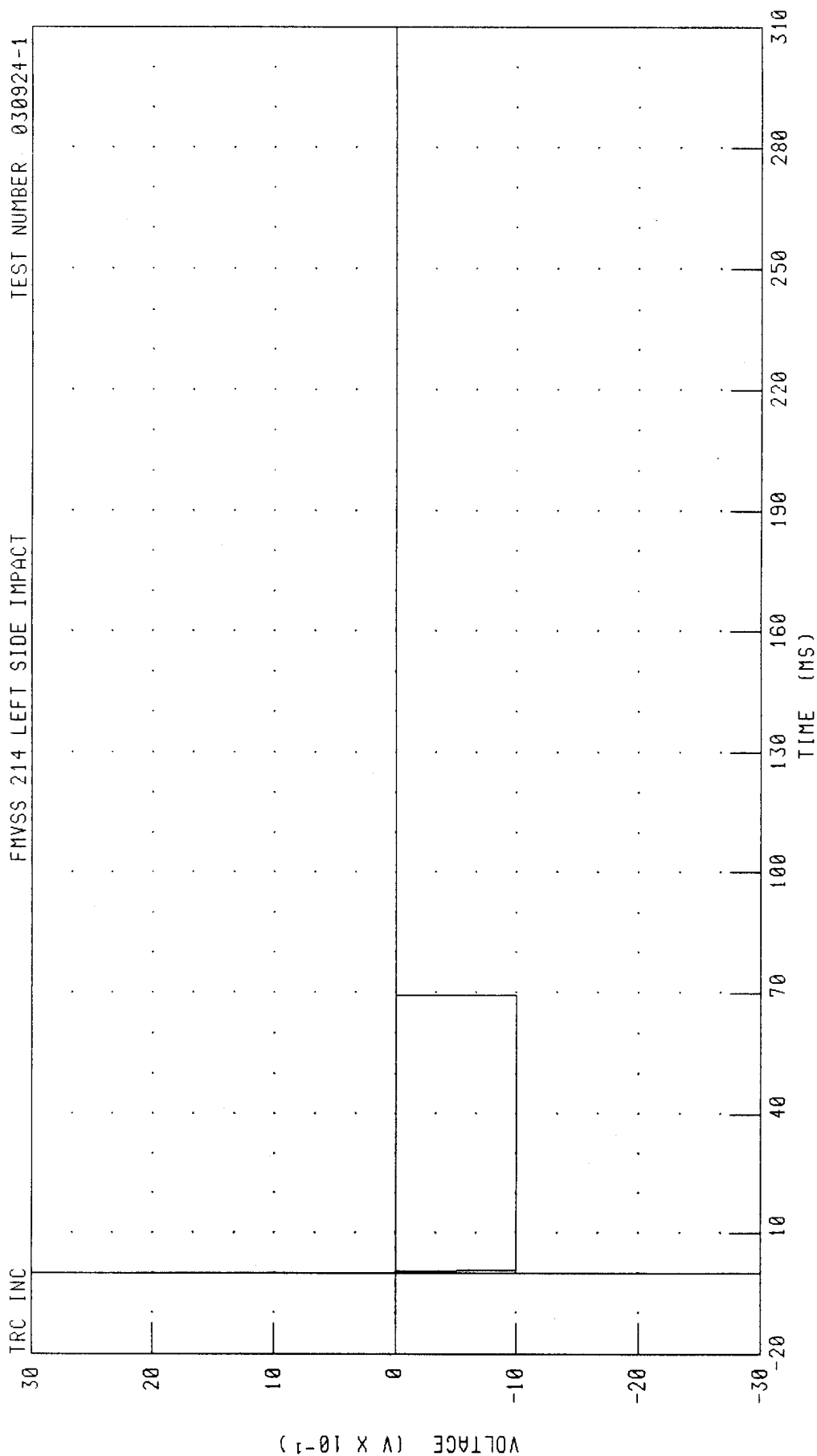
CHANNEL: MDBR1 FILTER: CH CLASS 1000

PEAK DATA: 0 00 V @ 310.00 MS, -1 00 V @ 2.16 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

MOB LEFT SIDE CONTACT SWITCH

FMVSS 214 LEFT SIDE IMPACT TEST NUMBER 030924-1



CHANNEL: MDBL1 FILTER: CH. CLASS 1000

PEAK DATA: 0 00 V @ 310 00 MS, -1 00 V @ 0 72 MS

Driver and Passenger Dummy Instrumentation Plots
Acceleration Data - FIR Filtered

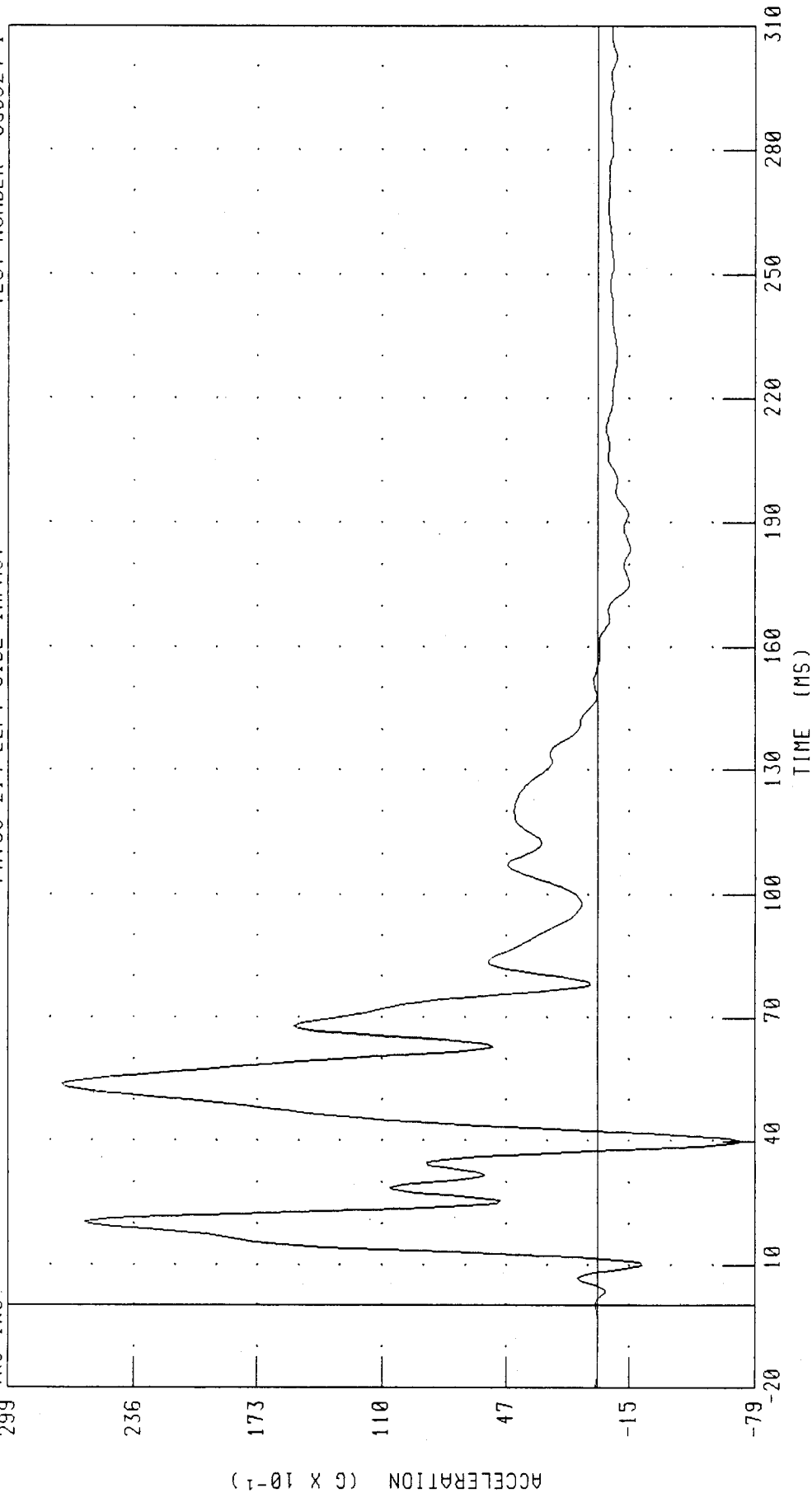
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

DRIVER UPPER RIB Y-AXIS ACCELERATION

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

TRC INC.



CHANNEL: LURYG1 FILTER: FIR 100

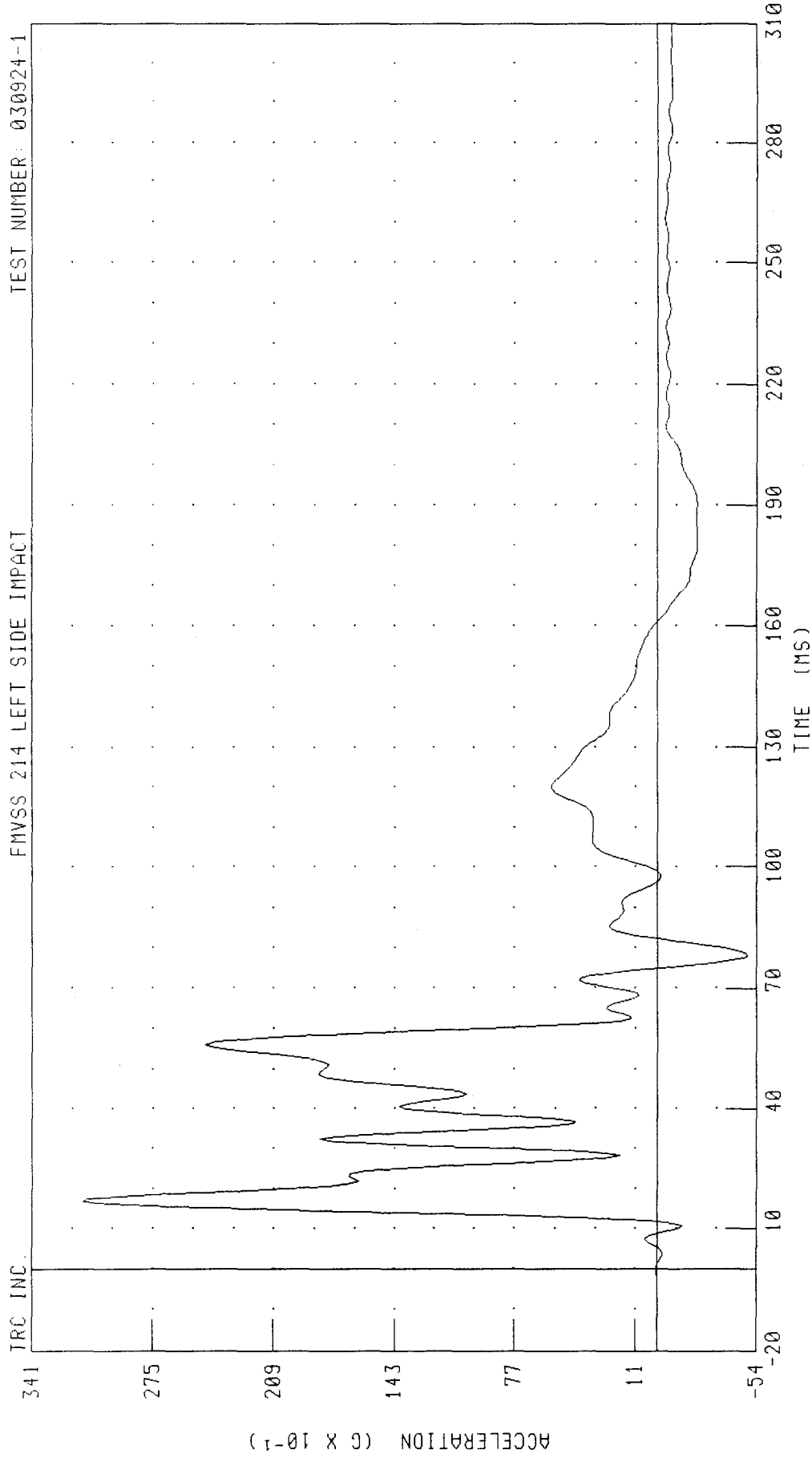
PEAK DATA: 27.24 G @ 53.75 MS, -7.27 G @ 40.00 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

DRIVER LOWER RIB Y-AXIS ACCELERATION

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030924-1



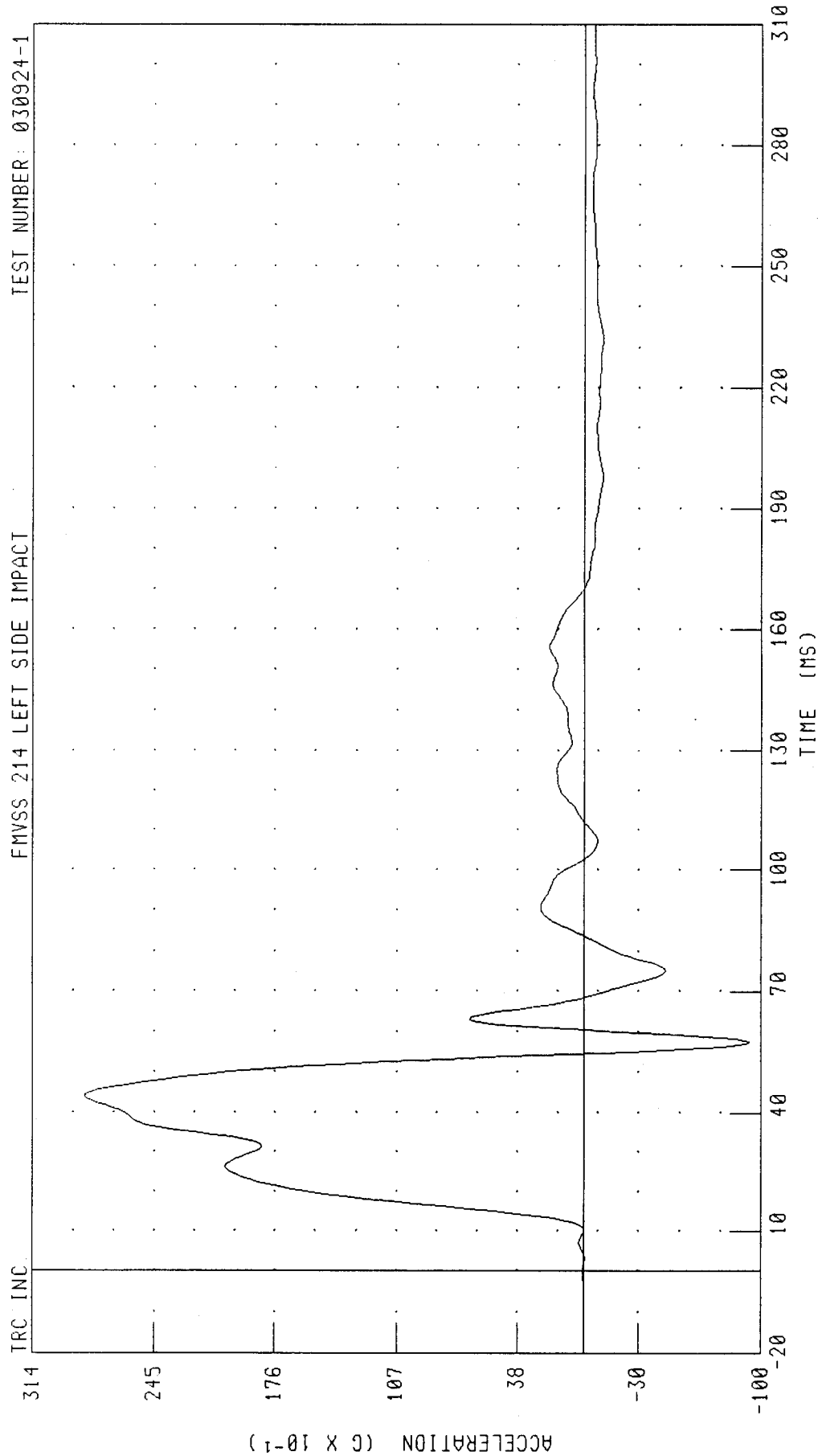
CHANNEL: LLRYC1 FILTER: FIR 100

PEAK DATA 31.44 G @ 16.87 MS, -4.93 G @ 78.13 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

DRIVER LOWER SPINE Y-AXIS ACCELERATION

FMVSS 214 LEFT SIDE IMPACT TEST NUMBER: 030924-1



CHANNEL: TI2YC1 FILTER: FIR 100

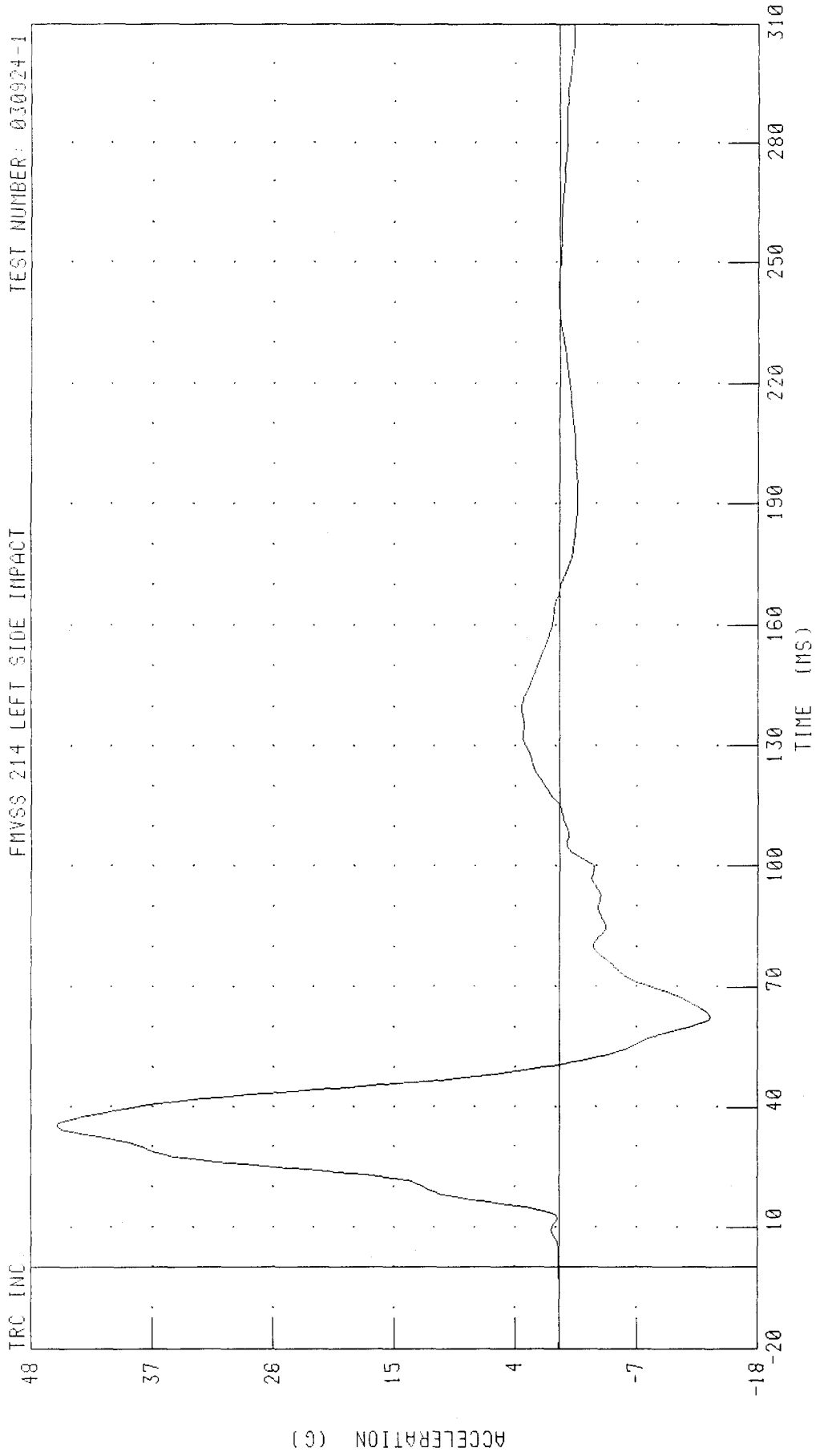
PEAK DATA: 28.44 G @ 43.75 MS, -9.34 G @ 57.50 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

DRIVER PELVIS Y-AXIS ACCELERATION

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030924-1



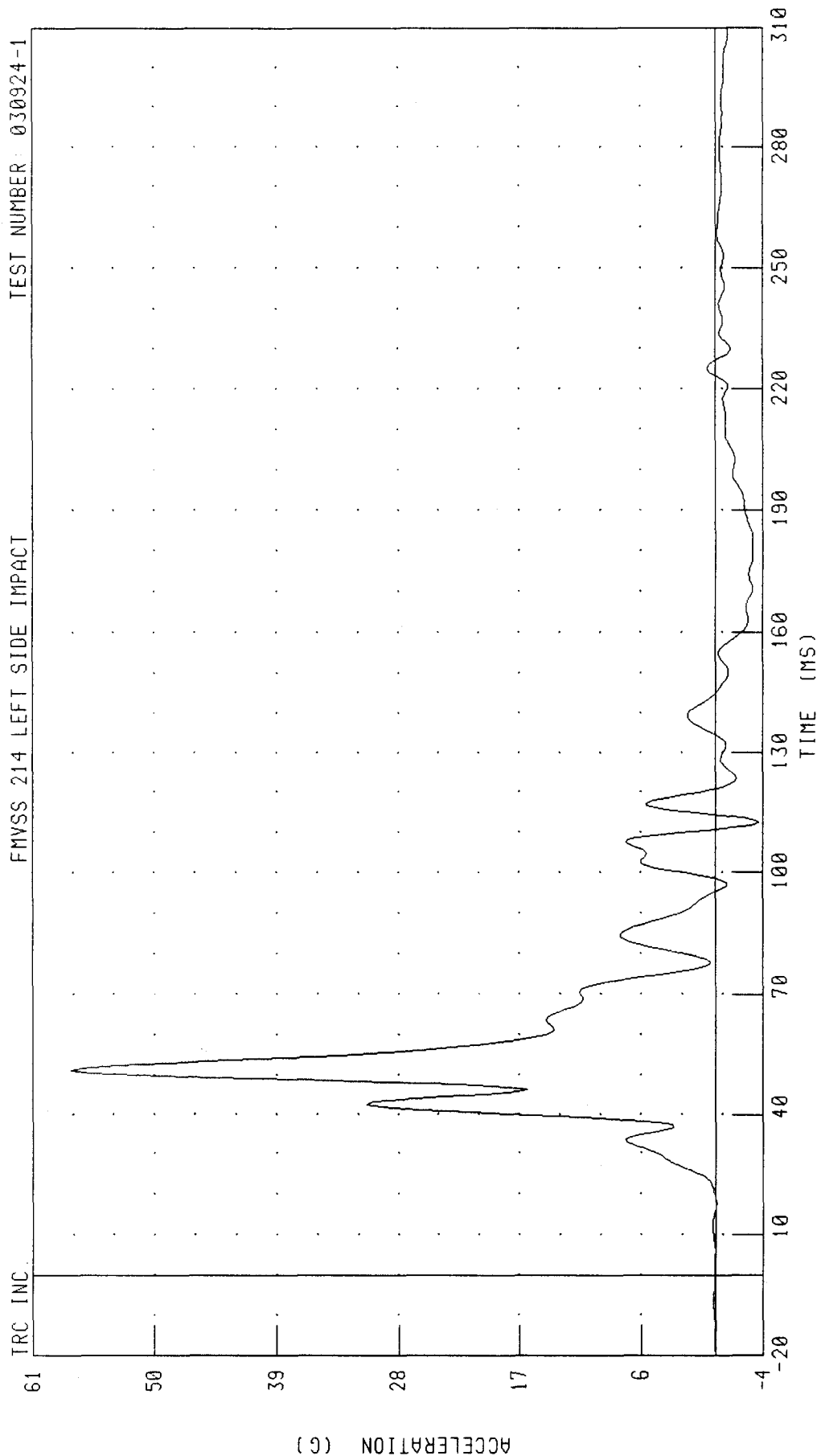
CHANNEL: PEVYC1 FILTER: FIR 100

PEAK DATA: 45.62 G @ 35.00 MS, -13.69 G @ 62.50 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
LEFT REAR PASSENGER UPPER RIB Y-AXIS ACCELERATION

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

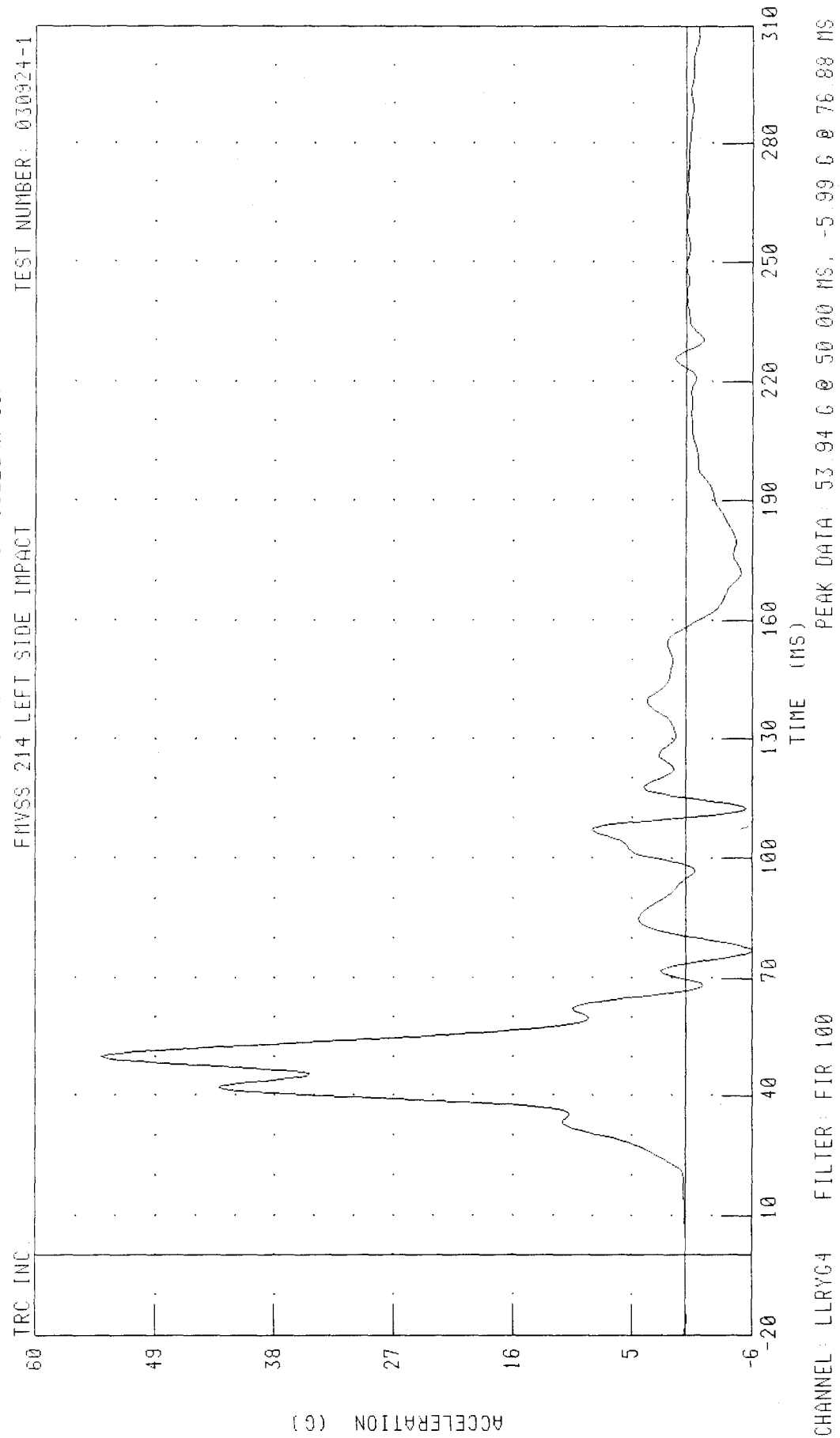


CHANNEL: LURYG4 FILTER: FIR 100

PEAK DATA: 58.24 G @ 51.25 MS, -3.97 G @ 112.50 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

LEFT REAR PASSENGER LOWER RIB Y-AXIS ACCELERATION



55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
LEFT REAR PASSENGER LOWER SPINE Y-AXIS ACCELERATION

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

TRC INC.

498

406

314

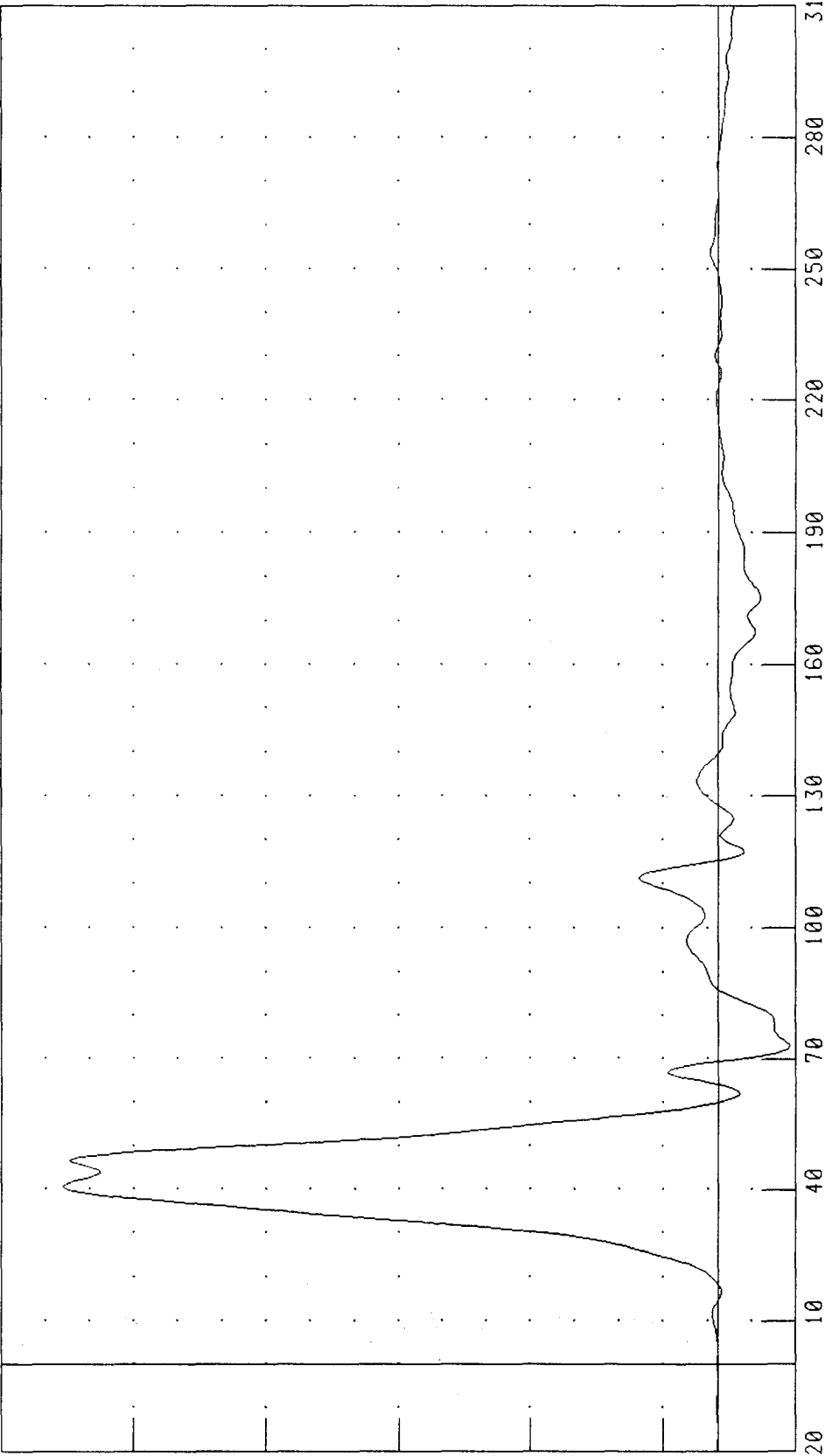
222

130

38

-54

ACCELERATION ($G \times 10^{-1}$)



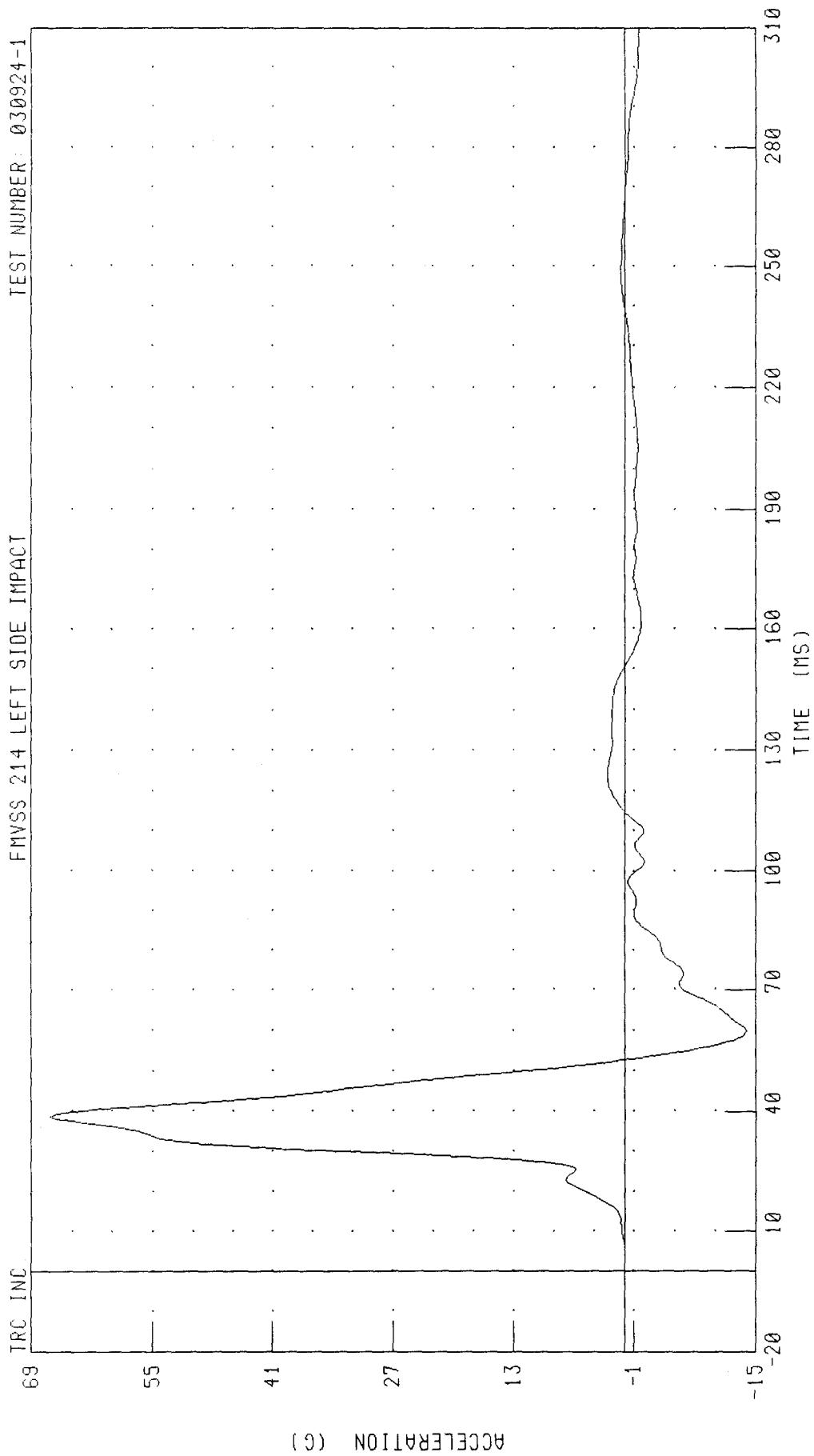
TIME (MS)

CHANNEL: T12YC4 FILTER: FIR 100

PEAK DATA: 45 53 G @ 40 63 MS, -4 98 G @ 73 13 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
LEFT REAR PASSENGER PELVIS Y-AXIS ACCELERATION

FMVSS 214 LEFT SIDE IMPACT TEST NUMBER: 030924-1



CHANNEL: PEVYG4 FILTER: FIR 100

PEAK DATA: 66.87 G @ 38.75 MS, -13.91 G @ 60.00 MS

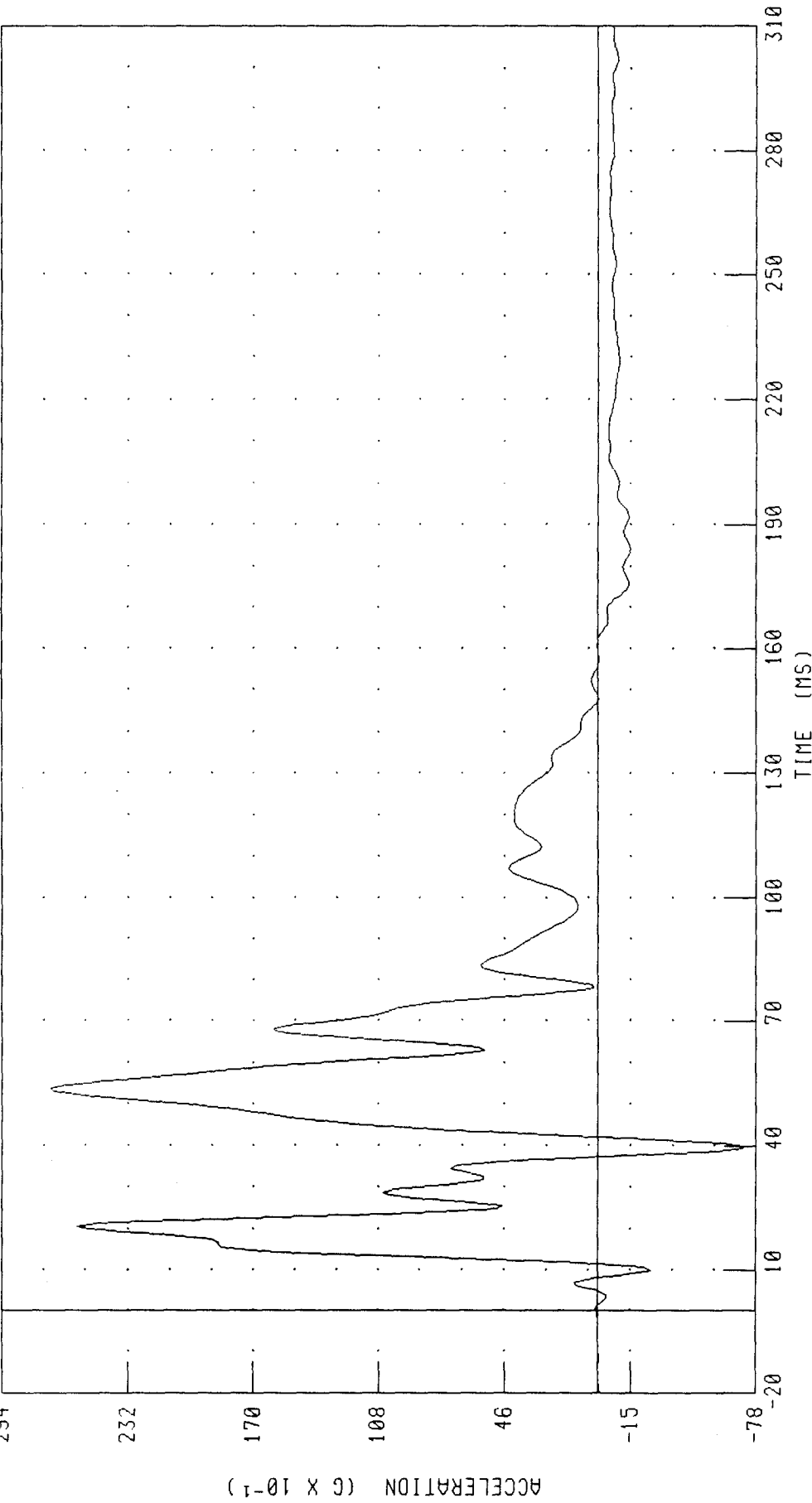
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330

DRIVER UPPER RIB Y-AXIS REDUNDANT ACCELERATION

TEST NUMBER: 030924-1

FMVSS 214 LEFT SIDE IMPACT

TRC INC.

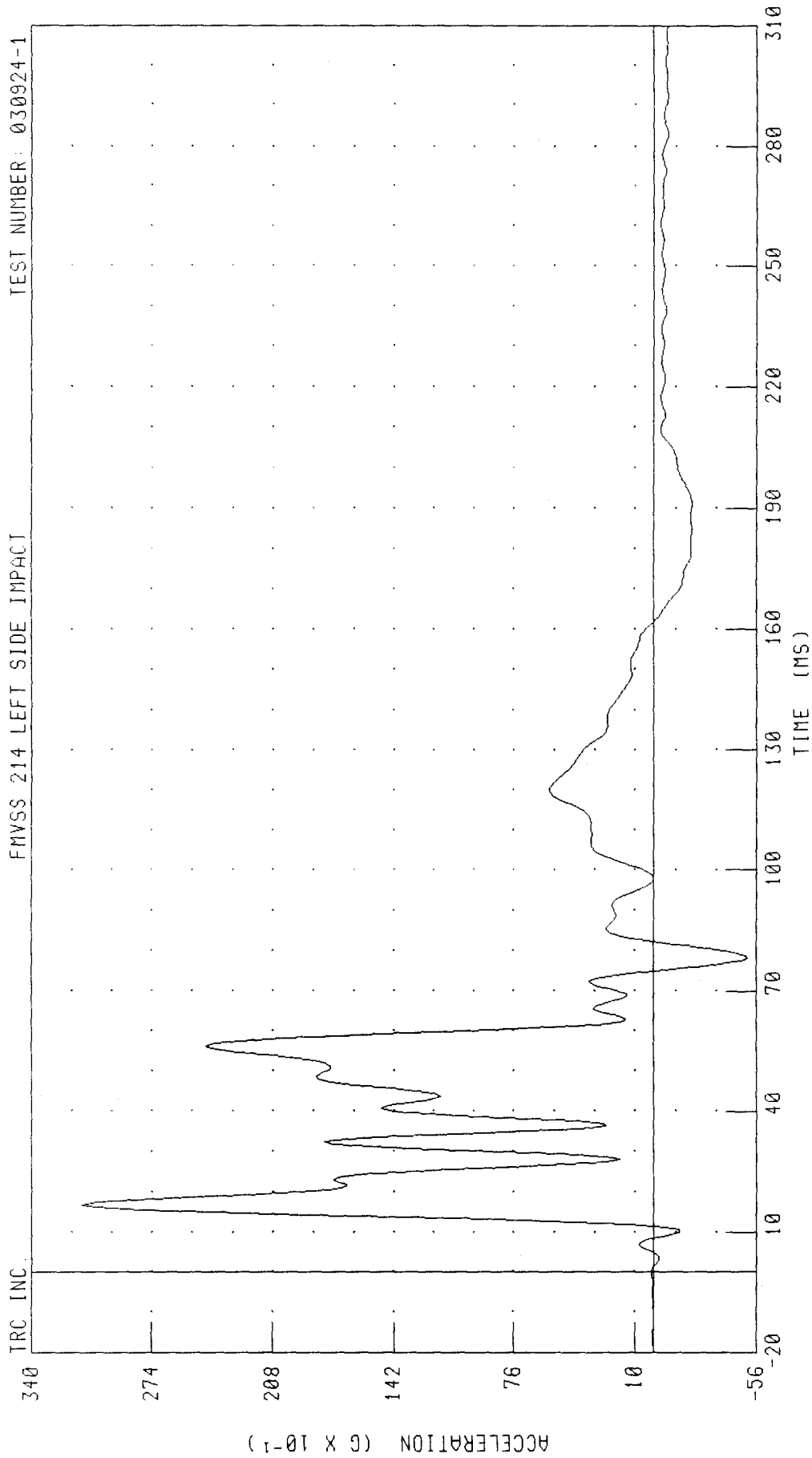


CHANNEL: LURYR1 FILTER: FIR 100

PEAK DATA: 27.00 G @ 53.75 MS, -7.16 G @ 40.00 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
 DRIVER LOWER RIB Y-AXIS REDUNDANT ACCELERATION

FMVSS 214 LEFT SIDE IMPACT TEST NUMBER: 030924-1

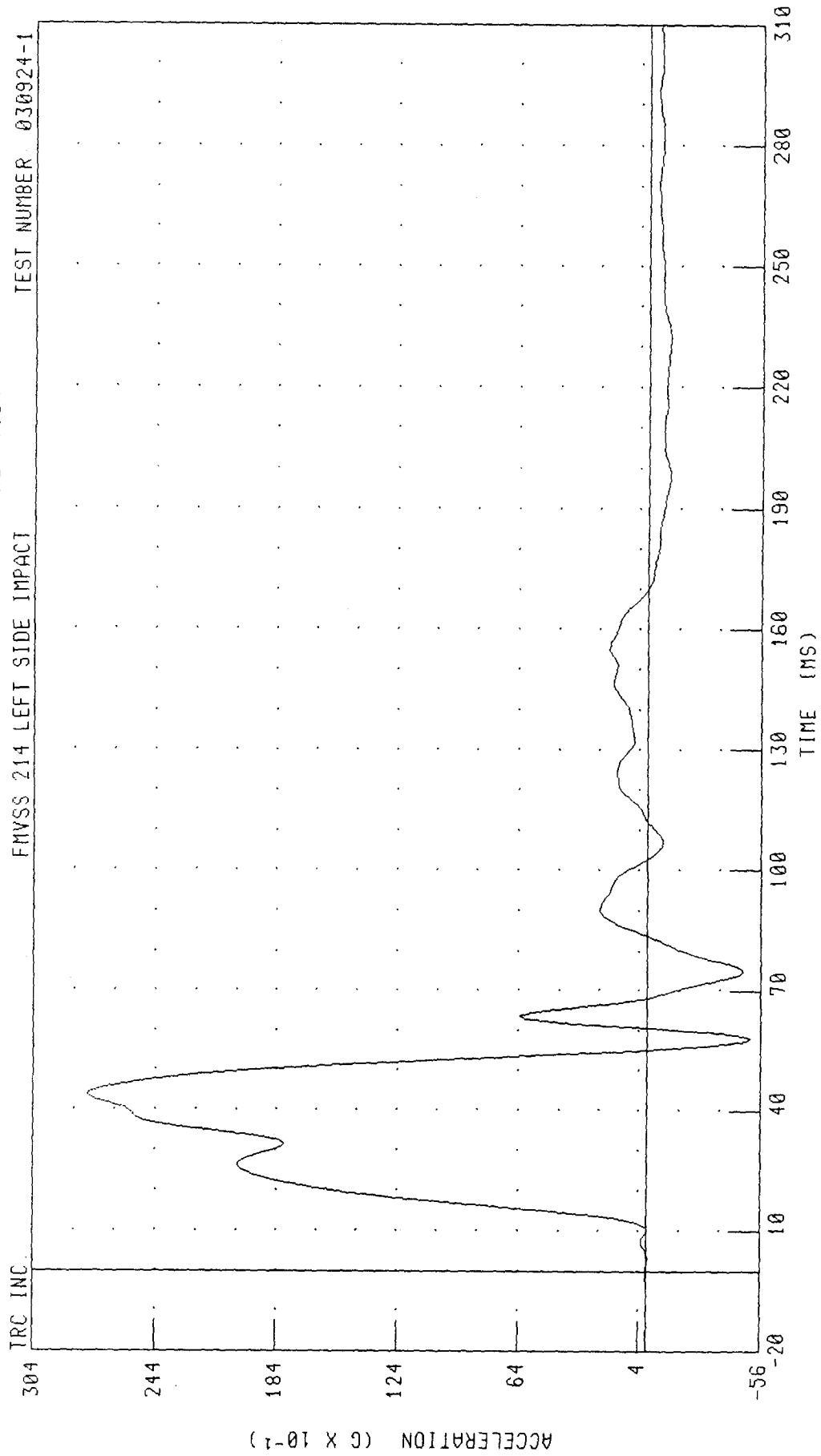


CHANNEL: LLRYR1 FILTER: FIR 100

PEAK DATA 31.30 G @ 16.87 MS, -5.12 G @ 78.13 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
DRIVER LOWER SPINE Y-AXIS REDUNDANT ACCELERATION

FMVSS 214 LEFT SIDE IMPACT TEST NUMBER 030924-1

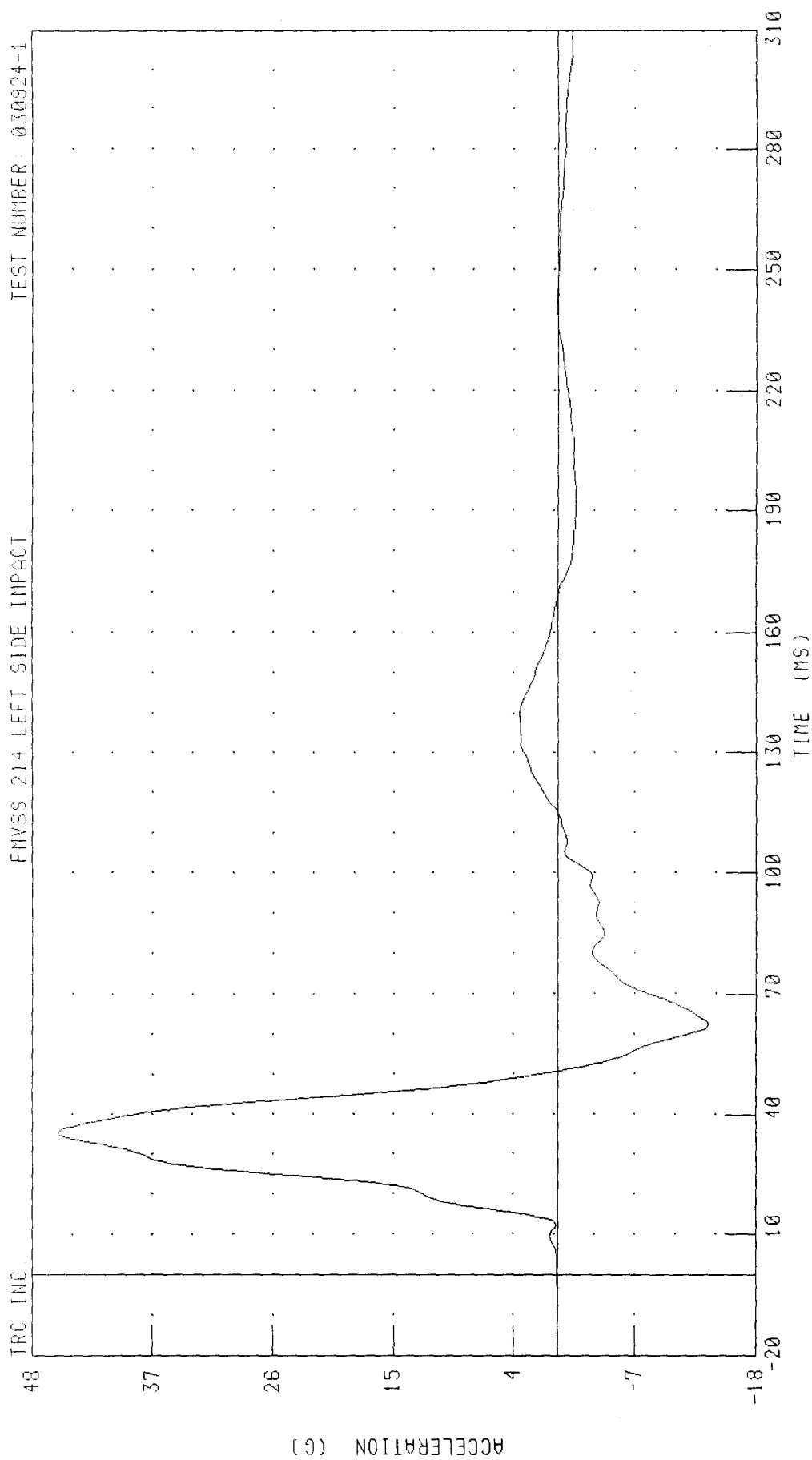


CHANNEL: T12YR1 FILTER: FIR 100

PEAK DATA: 27 71 0 0 43.75 MS, -5 12 0 0 58.13 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
DRIVER PELVIS Y-AXIS REDUNDANT ACCELERATION

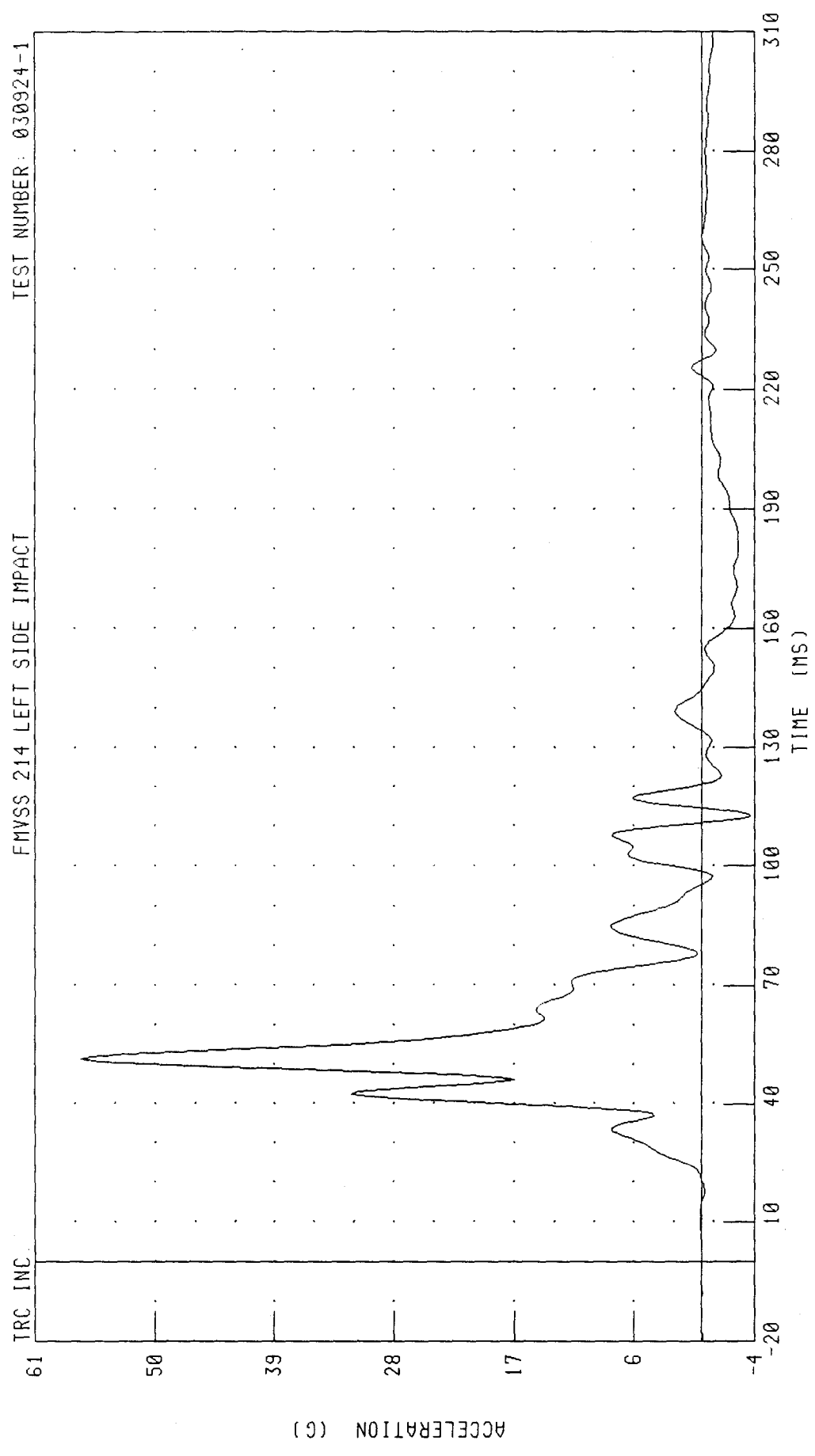
FMVSS 214 LEFT SIDE IMPACT TEST NUMBER: 030924-1



CHANNEL: PEVYR1 FILTER: FIR 100

PEAK DATA: 45.63 G @ 35.00 MS; -13.67 G @ 62.50 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
LEFT REAR PASSENGER UPPER RIB Y-AXIS REDUNDANT ACCELERATION



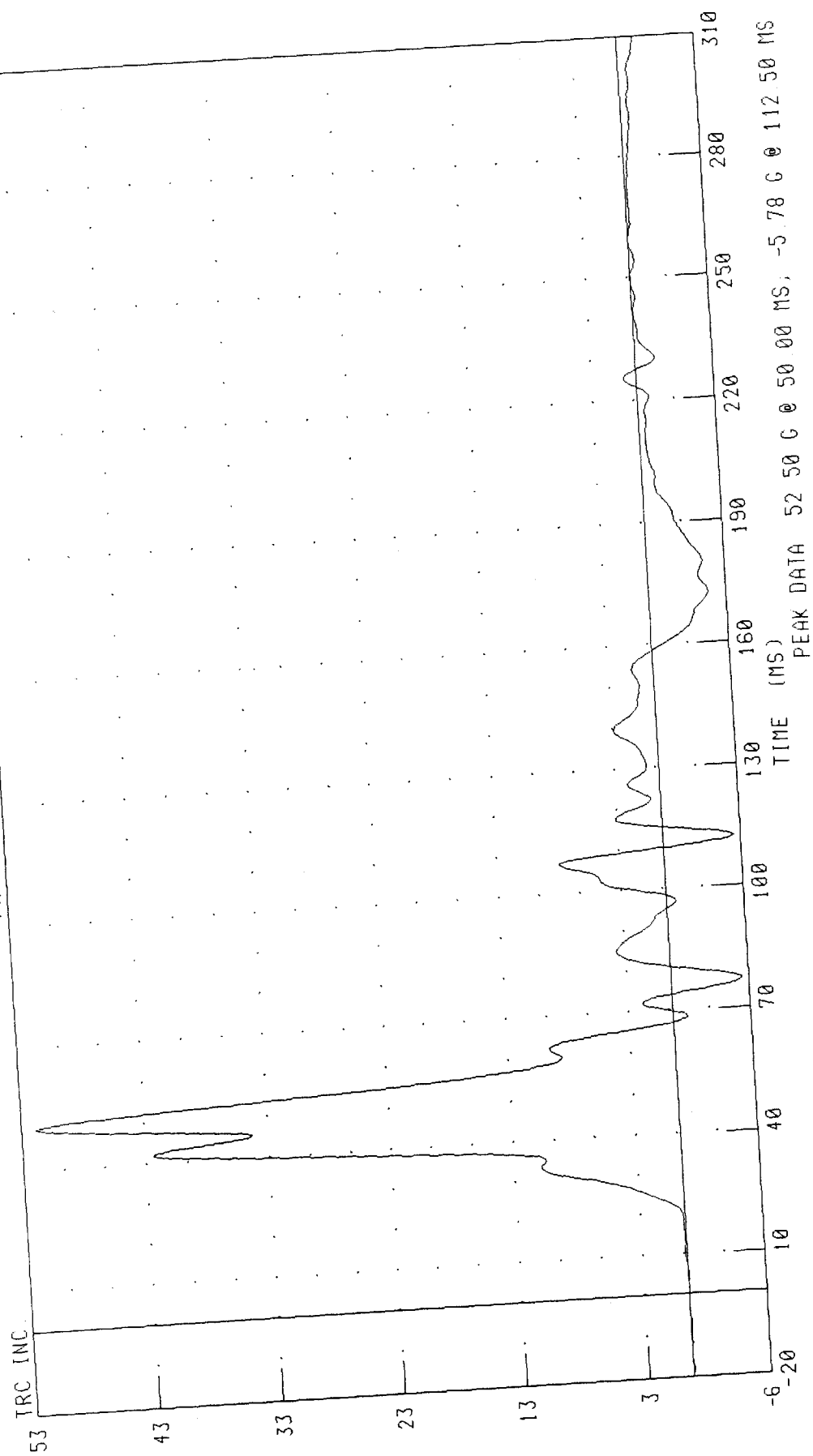
2004 LEXUS RX330

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF

LEFT REAR PASSENGER LOWER RIB Y-AXIS REDUNDANT ACCELERATION

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030924-1



PEAK DATA 52 50 G @ 50 00 MS; -5 78 G @ 112 50 MS

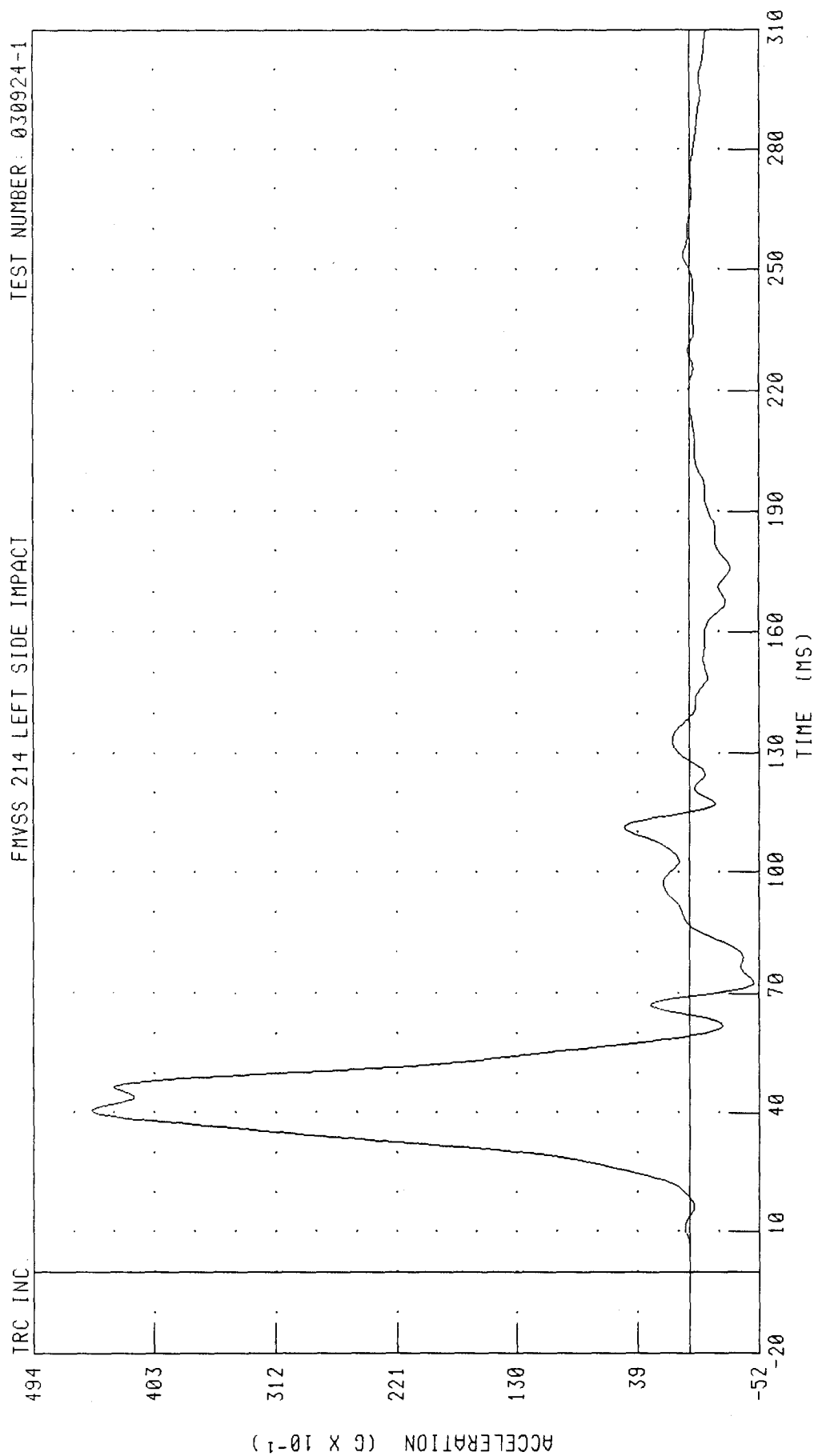
CHANNEL: LLRYR4 FILTER: FIR 100

(g) ACCELERATION

B-167

030924-1

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
LEFT REAR PASSENGER LOWER SPINE Y-AXIS REDUNDANT ACCELERATION

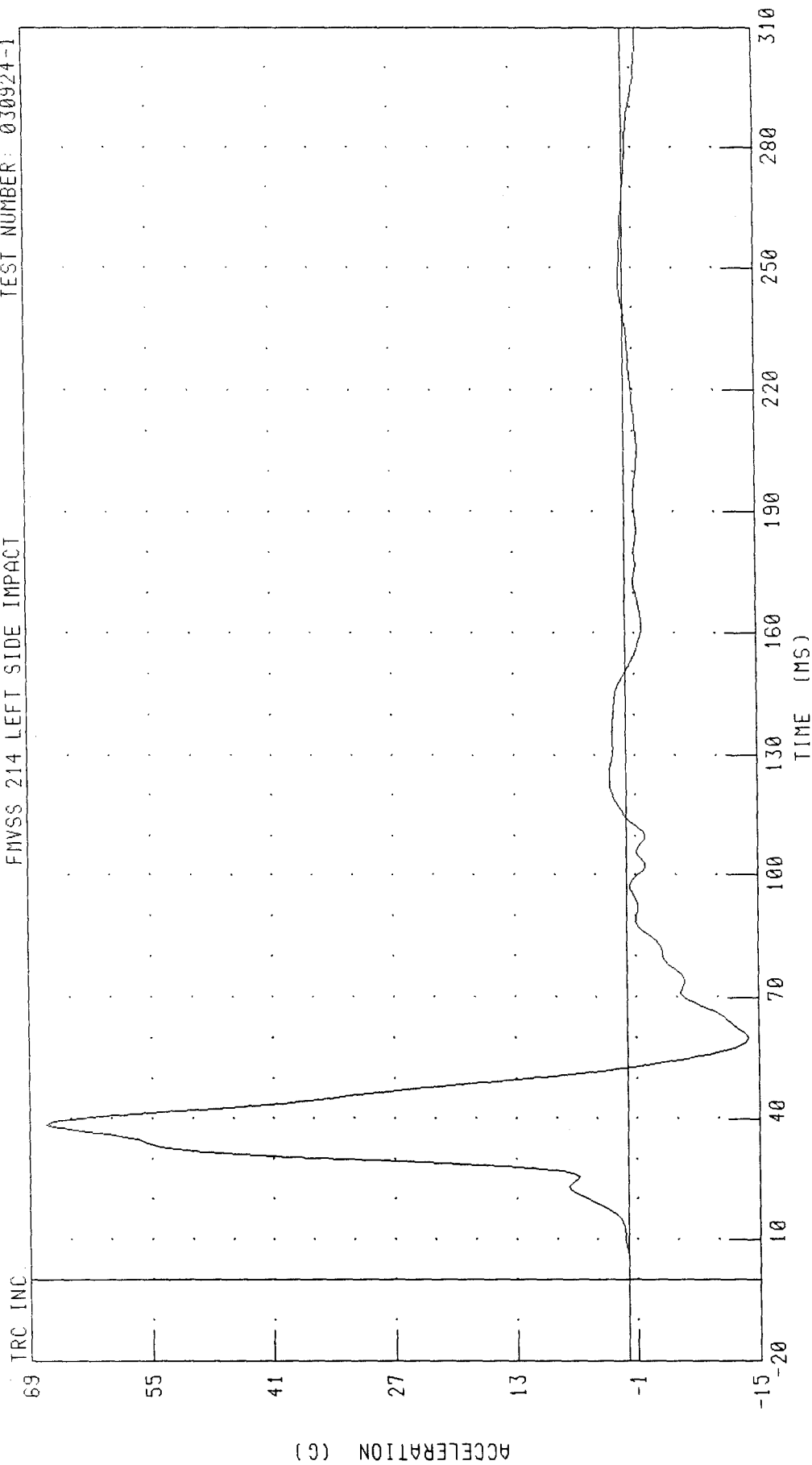


CHANNEL: T12YR4 FILTER: FIR 100

PEAK DATA: 45.03 G @ 40.63 MS; -4.79 G @ 72.50 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 LEXUS RX330
LEFT REAR PASSENGER PELVIS Y-AXIS REDUNDANT ACCELERATION

FMVSS 214 LEFT SIDE IMPACT TEST NUMBER: 030924-1



CHANNEL: PEVYR4 FILTER: FIR 100

PEAK DATA: 67.08 G @ 38.75 MS, -13.79 G @ 60.00 MS

Appendix C

SID HIII Configuration and Performance Verification Data

Summary
SID HIII Pre-Test and Post-Test Calibration
Configured For Left Side Impact

Date: 09/24/03 TRC Inc. Test Number: S/N055 & S/N906
Laboratory Technician: Jack Willeke

Test Parameter	Specification	SID HIII 055		SID HIII 906	
		Pre-Test	Post-Test	Pre-Test	Post-Test
SH - Seated Height (mm)	889-909	N/A ¹	909	901	904
RH - Rib Height (mm)	502-520	N/A ¹	511	511	506
HP - Hip Pivot Height (mm)	99 ref	N/A ¹	99.1	99.1	99.1
RD - Rib from Back Line (mm)	229-241	N/A ¹	223 ²	229	229
KH - Knee Pivot from Back Line (mm)	511-526	N/A ¹	525	513	525
KV - Knee Pivot to Floor (mm)	490-505	N/A ¹	492	496	491
HW - Hip Width (mm)	356-391	N/A ¹	366	370	384
Thorax Impacts					
Temperature (°C)	18.9-25.5	21.1	21.7	21.1	21.1
Relative Humidity (%)	10-70	41.0	31.0	54.0	31.0
Probe Speed (m/s)	4.27-4.33	4.29	4.31	4.26	4.32
Upper Rib (g's)	37-46	40.9	38.3	37.5	42.6
Lower Rib (g's)	37-46	39.8	37.2	37.8	43.3
Lower Spine (g's)	15-22	19.3	17.0	16.1	19.7
Pelvis Impacts					
Temperature (°C)	18.9-25.5	21.1	21.1	21.1	21.1
Relative Humidity (%)	10-70	40.0	22.0	55.0	31.0
Probe Speed (m/s)	4.27-4.33	4.27	4.31	4.28	4.31
Pelvis (g's)	40-60	44.2	44.6	52.6	45.8

¹ Pre-test external dimensions were not collected.

² Did not meet specifications post-test.

Calibration Test Results

Pre-Test

SID HIII: 055

Configured for Left Side Impact

External Dimensions:	External dimensions were not taken.
Lateral Head Drop Test:	The head passed all lateral drop test requirements.
Lateral Neck Test:	The neck passed all impact test requirements.
Lateral Thorax Impact Test:	The thorax passed all impact test requirements.
Lumbar Flexion Test:	The dummy met the lumbar flexion test requirements.
Abdominal Compression Test:	The abdomen met the compression test requirements.
Pelvis Impact Test:	The lateral pelvis passed all impact test requirements.
Thoracic Shock Absorber Test:	The thoracic shock absorber was tested on September 15, 2003 for a previous calibration series.

TRANSPORTATION RESEARCH CENTER INC.

LATERAL HEAD DROP TEST

HYBRIDI III SID DUMMY

22-SEP-03

LEFT SIDE CONFIGURATION

TRC INC. TEST NO. HL05508C 572M SID/HIII SN055 HEAD CAL08

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9 - 25.6 deg. C	21.44 deg. C
RELATIVE HUMIDITY	10 - 70 %	51.00 %
PEAK RESULTANT ACCELERATION	120 - 150 G	140.63 G
PEAK LONGITUDINAL ACCELERATION	15 G MAX	-9.39 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

TECHNICIAN

V.F. Watter

RUN NUMBER: 092703.1859;2

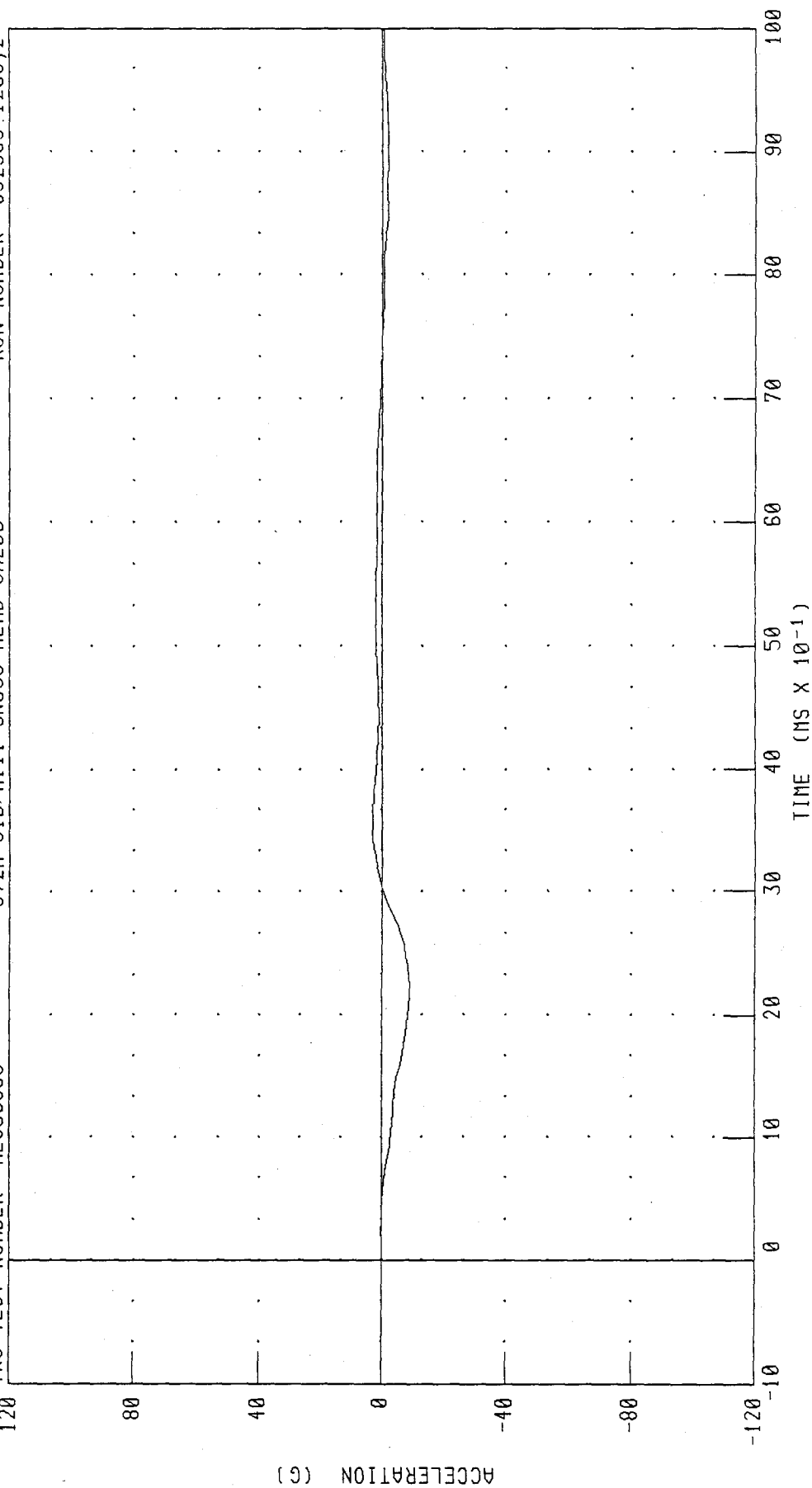
572M SID/HIII DUMMY CALIBRATION -- 35 DEGREE LEFT LATERAL HEAD DROP

HEAD ACCELERATION X AXIS

TRC TEST NUMBER: HL05508C

572M SID/HIII SN055 HEAD CAL08

RUN NUMBER: 092903.1208,2

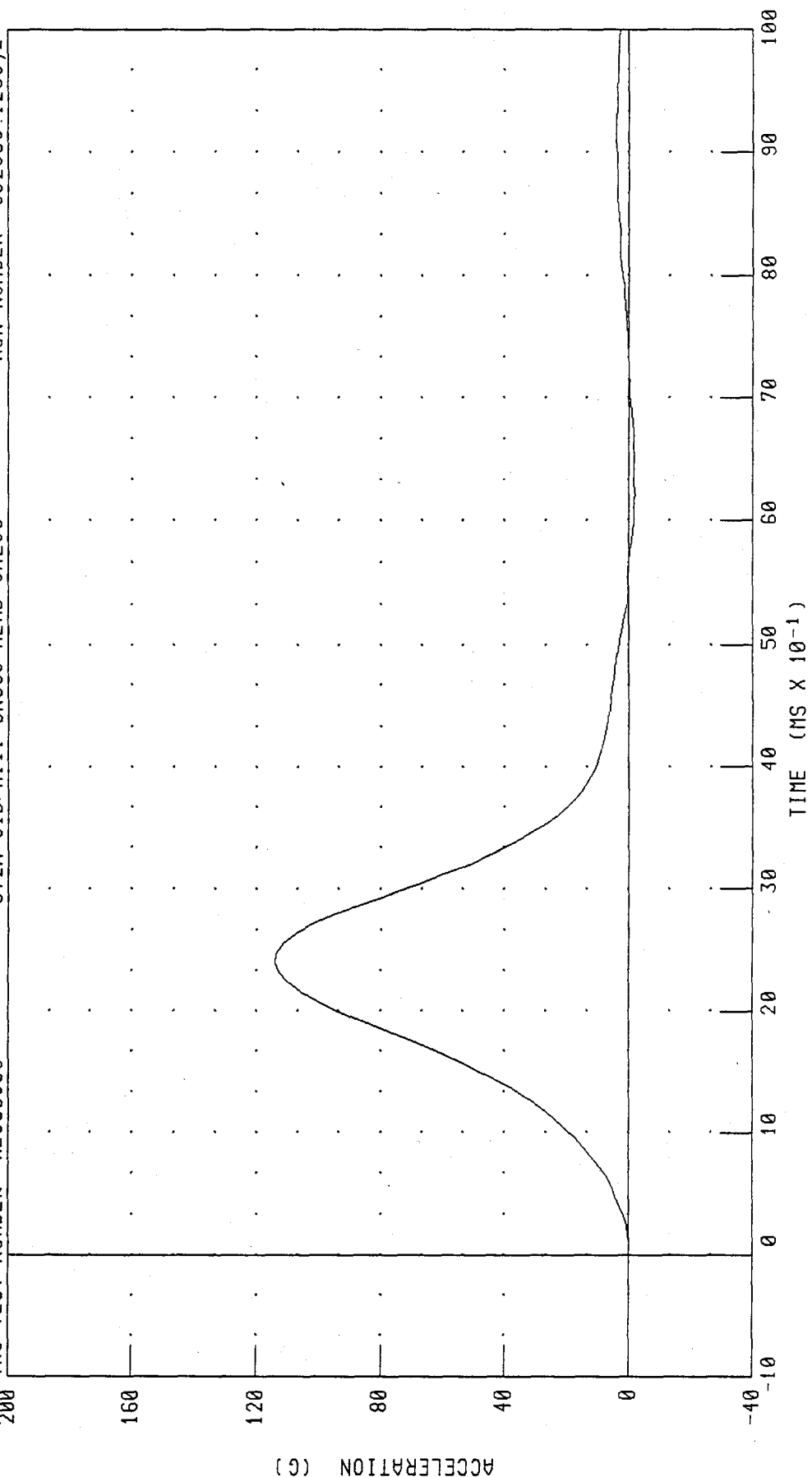


PEAK DATA: 2 90 G @ 3.52 MS; -9.39 G @ 2.16 MS

CHANNEL: HEDXC FILTER: CH. CLASS 1000

572M SID/HIII DUMMY CALIBRATION -- 35 DEGREE LEFT LATERAL HEAD DROP
HEAD ACCELERATION Y AXIS

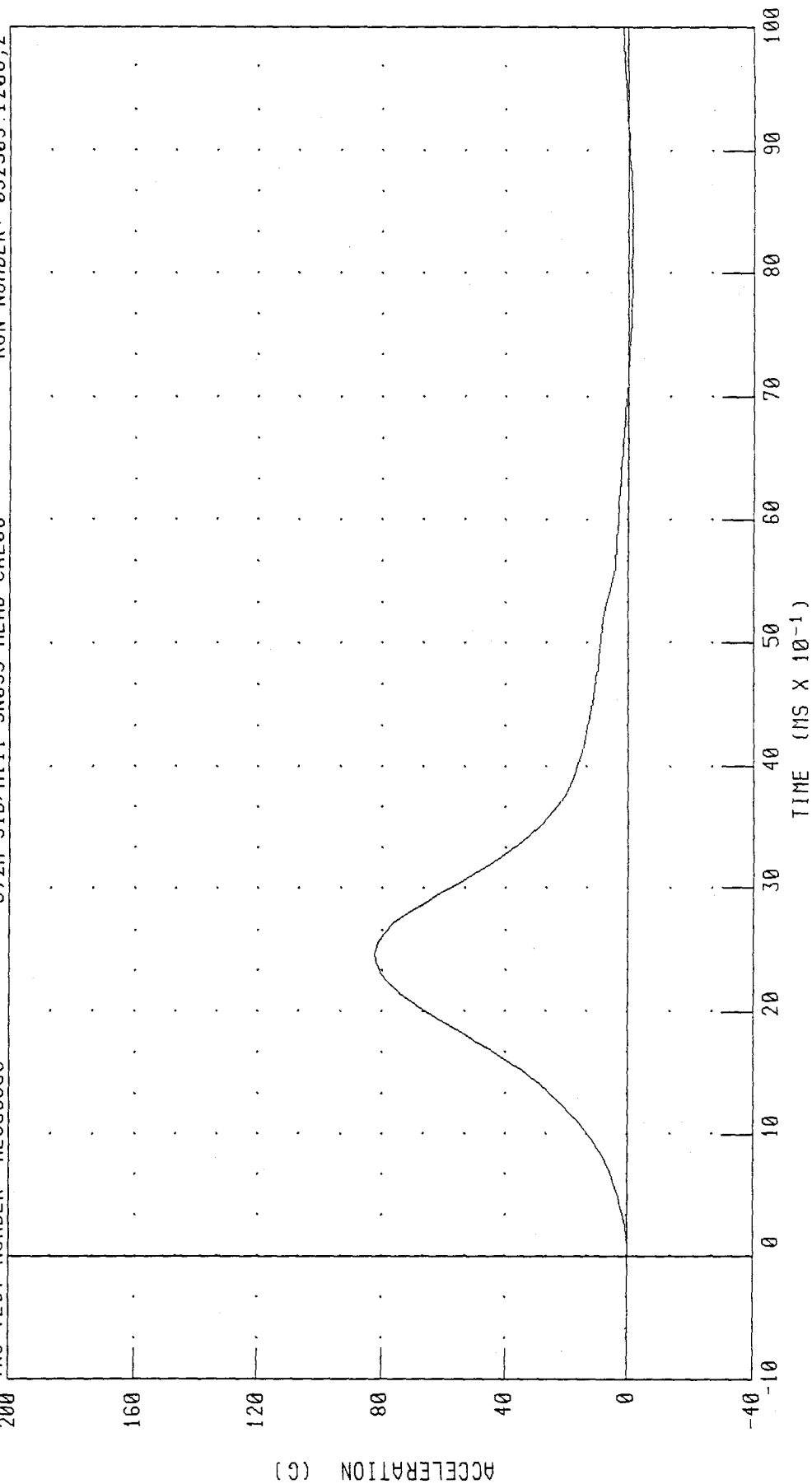
TRC TEST NUMBER: HL05508C 572M SID/HIII SN055 HEAD CAL08 RUN NUMBER: 092903.1208;2



CHANNEL: HEDYC FILTER: CH. CLASS 1000 PEAK DATA: 114.03 G @ 2.40 MS; -1.96 G @ 6.24 MS

572M SID/HIII DUMMY CALIBRATION -- 35 DEGREE LEFT LATERAL HEAD DROP
HEAD ACCELERATION Z AXIS

IRC TEST NUMBER: HL05508C 572M SID/HIII SN055 HEAD CAL08 RUN NUMBER: 092903.1208,2



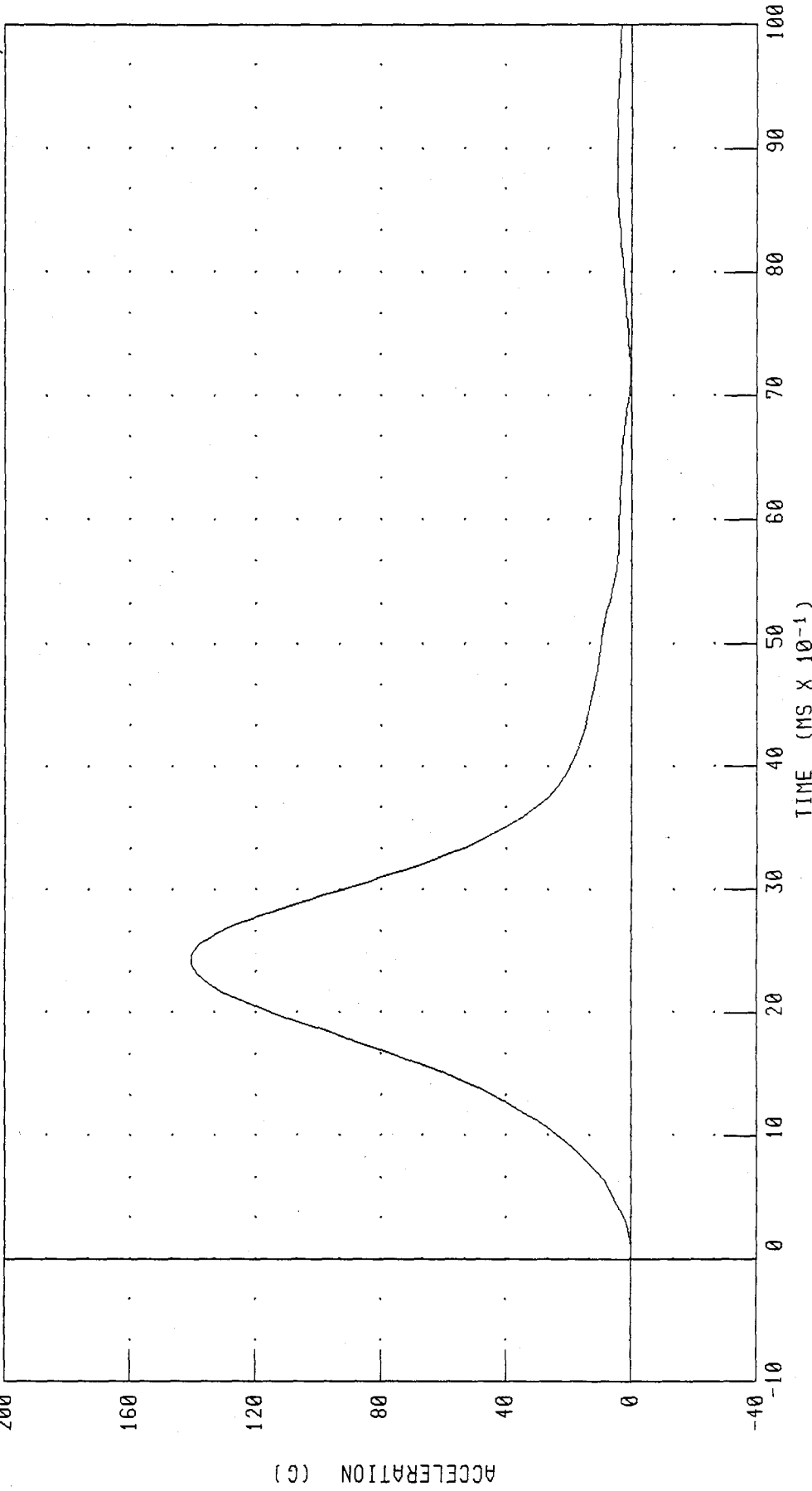
PEAK DATA: 82.06 G @ 2.48 MS; -1.44 G @ 8.32 MS

CHANNEL: HEADZG FILTER: CH. CLASS 1000

572M SID/HIII DUMMY CALIBRATION -- 35 DEGREE LEFT LATERAL HEAD DROP

HEAD RESULTANT ACCELERATION

IRC TEST NUMBER: HL05508C 572M SID/HIII SN055 HEAD CAL08 RUN NUMBER: 092903.1208;2



CHANNEL: HEDRC

FILTER: CH. CLASS 1000

TIME (MS X 10⁻¹)

PEAK DATA: 140.63 G @ 2.40 MS; 0.01 G @ -0.48 MS

TRANSPORTATION RESEARCH CENTER INC.

LATERAL NECK TEST

HYBRIDI III SID DUMMY

23-SEP-03

LEFT SIDE CONFIGURATION

TRC INC.

TEST NO. NL05508

572M SID/HIII SN055 NECK CAL08

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6 - 22.2 deg. C	21.39 deg. C
RELATIVE HUMIDITY		10 - 70 %	49.00 %
IMPACT VELOCITY		6.89 - 7.13 M/S	7.06 M/S
INTEGRATED VELOCITY	10 MS	1.96 - 2.55 M/S	2.18 M/S
	20 MS	4.12 - 5.10 M/S	4.53 M/S
	30 MS	5.73 - 7.01 M/S	6.61 M/S
	40 - 70 MS	6.27 - 7.64 M/S	7.12- 7.28 M/S
MAXIMUM MIDSAGGITAL PLANE ROTATION		66 - 82 DEG.	71.71 deg.
ROTATION ANGLE DECAY TIME FROM PEAK TO ZERO		58 - 67 MS	59.52 MS
MAXIMUM MOMENT ABOUT OCCIPITAL CONDYLE		73.0 - 88.0 NM	86.27 NM
POSITIVE MOMENT DECAY TIME FROM PEAK TO ZERO		49 - 64 MS	53.84 MS
TIME OF MAXIMUM ROTATION AFTER MAXIMUM MOMENT		2 - 16 MS	10.16 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN

V. F. Watts

RUN NUMBER: 092703.1903;1

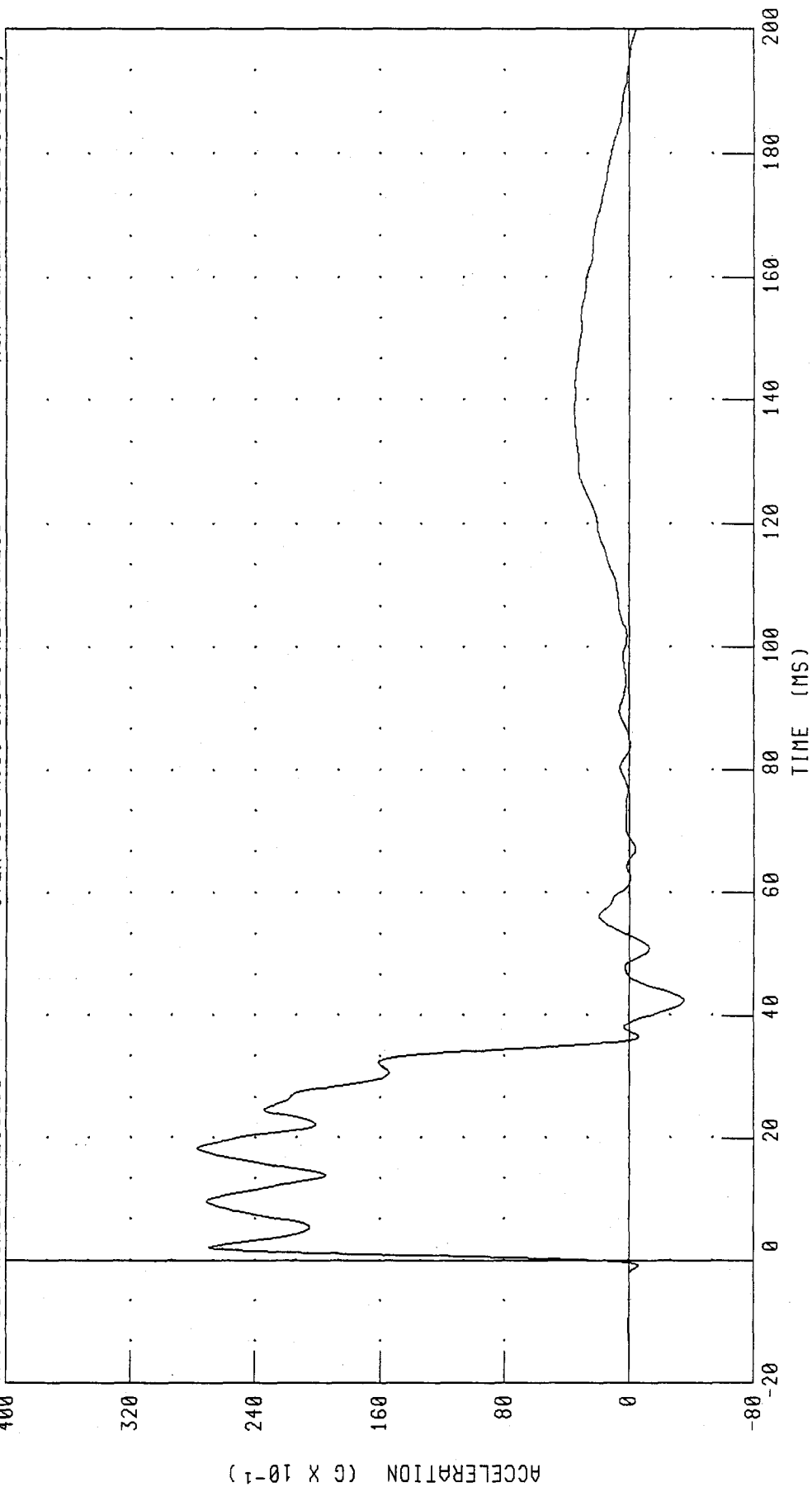
572M H3/SID DUMMY CALIBRATION -- LEFT LATERAL NECK TEST

PENDULUM DECELERATION

TRC TEST NUMBER: NL05508

572M SID/HIII SN055 NECK CAL08

RUN NUMBER: 092903.1215.1



PEAK DATA: 27.67 G @ 18.40 MS; -3.53 G @ 42.48 MS

CHANNEL: PENXC FILTER: CH. CLASS 180

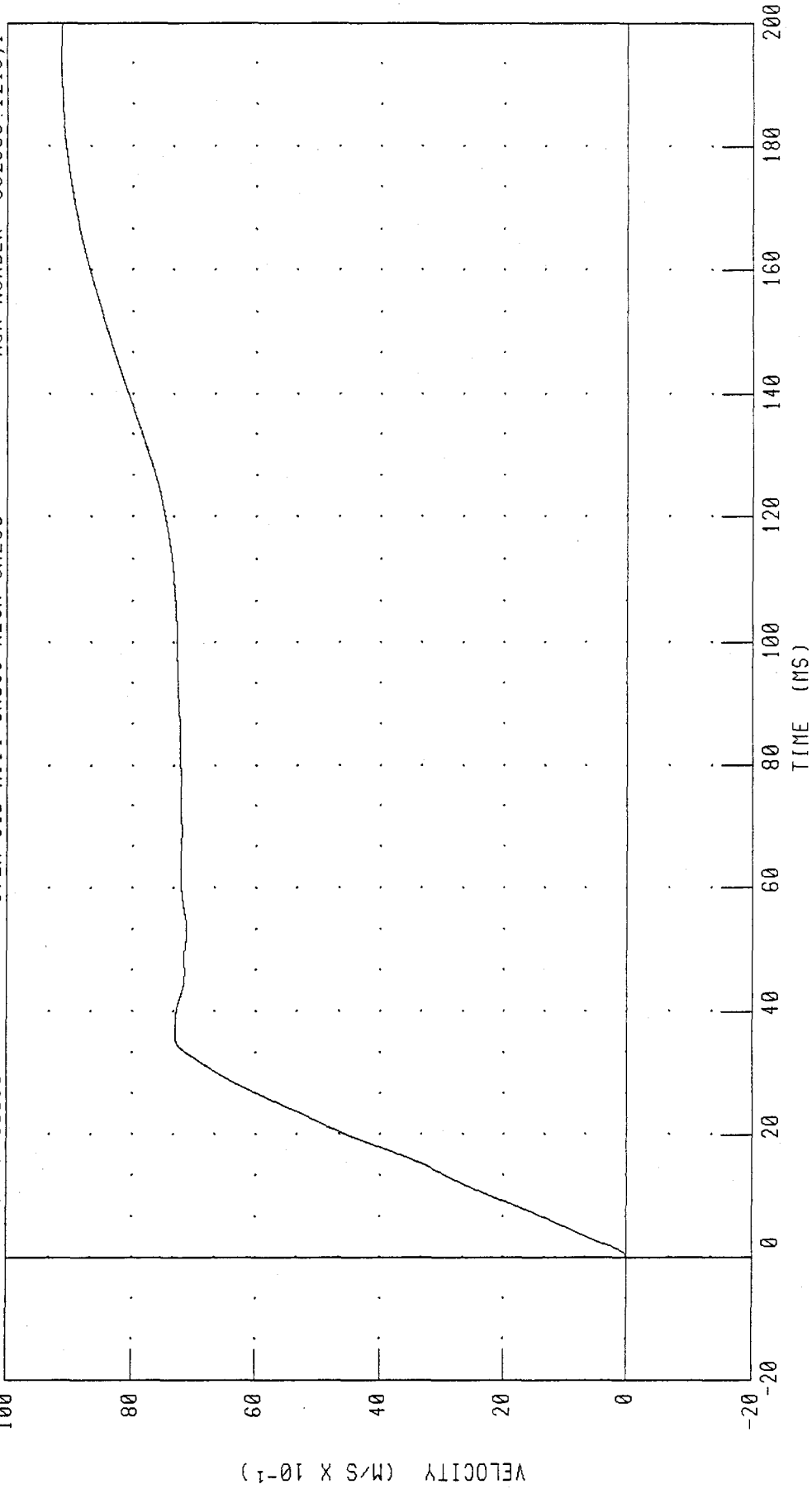
572M H3/SID DUMMY CALIBRATION --- LEFT LATERAL NECK TEST

INTEGRATED PENDULUM VELOCITY

TRC TEST NUMBER: NL05508

572M SID/H11 SN055 NECK CAL08

RUN NUMBER: 092903.1215.1



PEAK DATA: 9.14 M/S @ 194.40 MS, -0.01 M/S @ -0.40 MS

CHANNEL: PENXVI FILTER: CH. CLASS 180

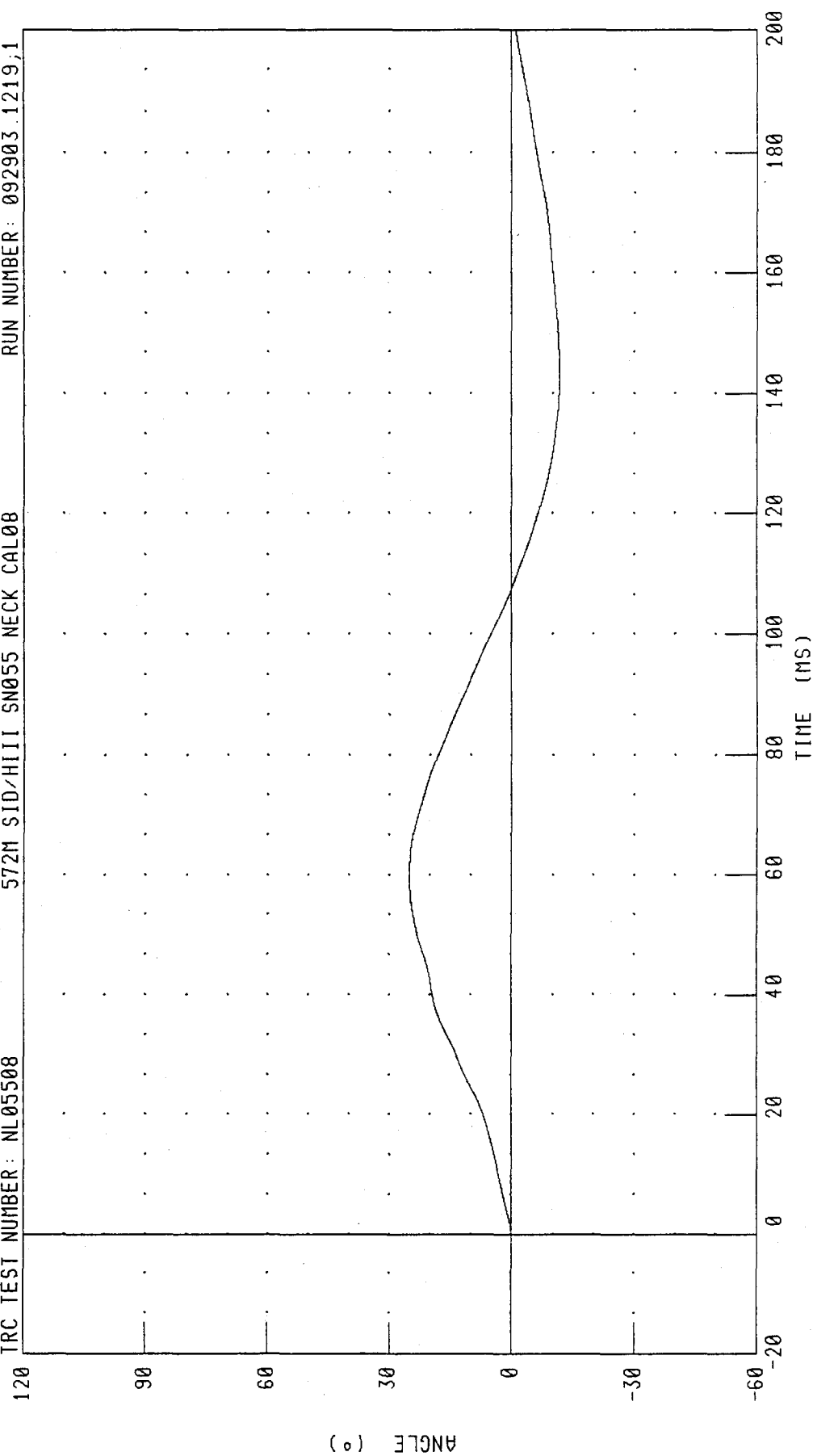
572M H3/SID DUMMY CALIBRATION -- LEFT LATERAL NECK TEST

ROTATION ABOUT BASE OF NECK

TRC TEST NUMBER: NL05508

572M SID/HIII SN055 NECK CAL08

RUN NUMBER: 092903.1219,1



CHANNEL: BETA

FILTER: CH. CLASS 60

PEAK DATA: 25.03 ° @ 59.84 MS, -11.72 ° @ 143.52 MS

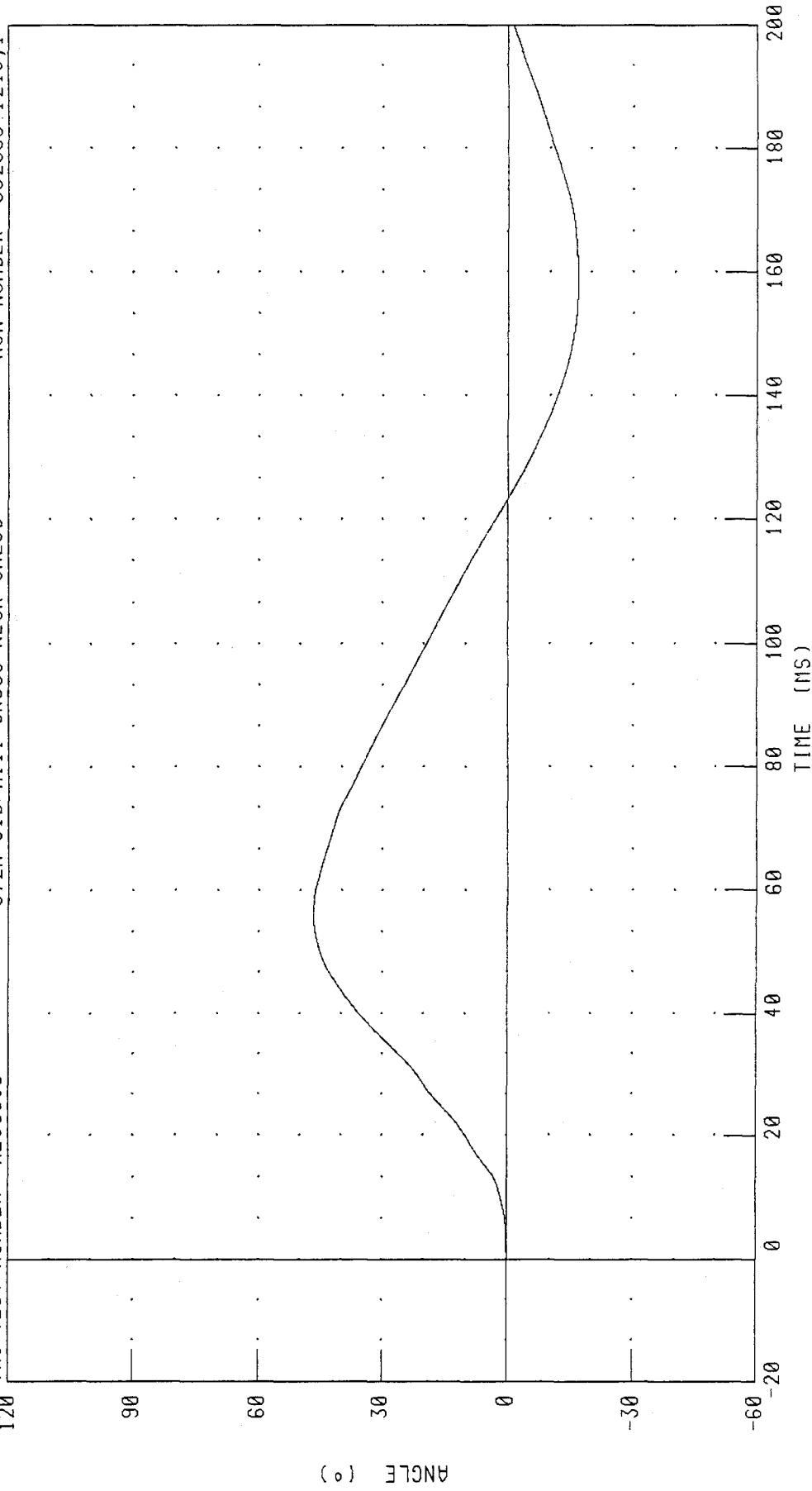
572M H3/SID DUMMY CALIBRATION -- LEFT LATERAL NECK TEST

ROTATION ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER: NL05508

572M SID/HIII SN055 NECK CAL08

RUN NUMBER: 092903 1215,1



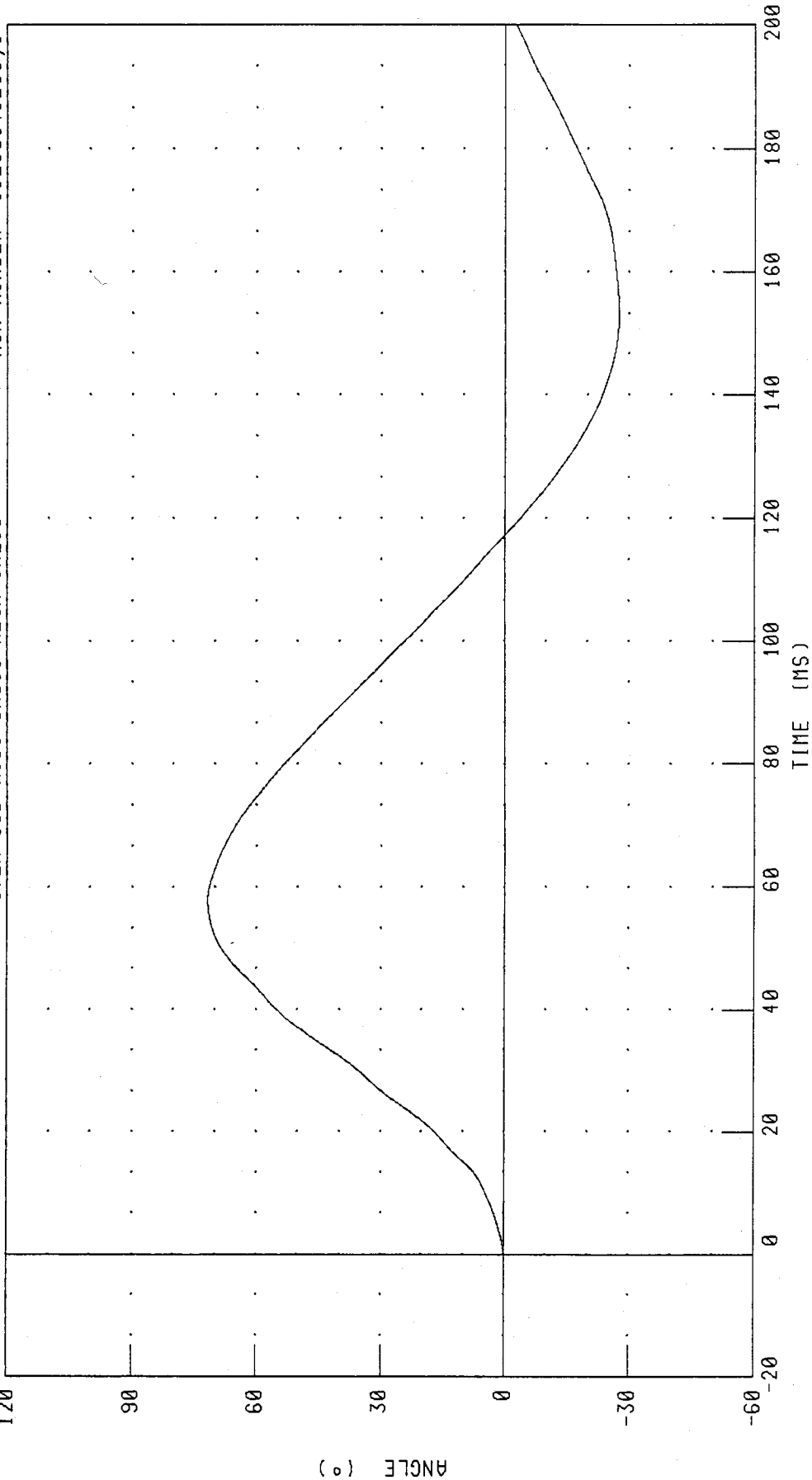
CHANNEL: THETA FILTER: CH CLASS 60

PEAK DATA: 46.78 ° @ 57.04 MS, -16.81 ° @ 158.96 MS

572M H3/SID DUMMY CALIBRATION -- LEFT LATERAL NECK TEST

TOTAL ROTATION

TRC TEST NUMBER: NL05508 572M SID/HIII SN055 NECK CAL08 RUN NUMBER: 092903.1215,1



PEAK DATA: 71.71 ° @ 57.76 MS; -27.49 ° @ 153.20 MS

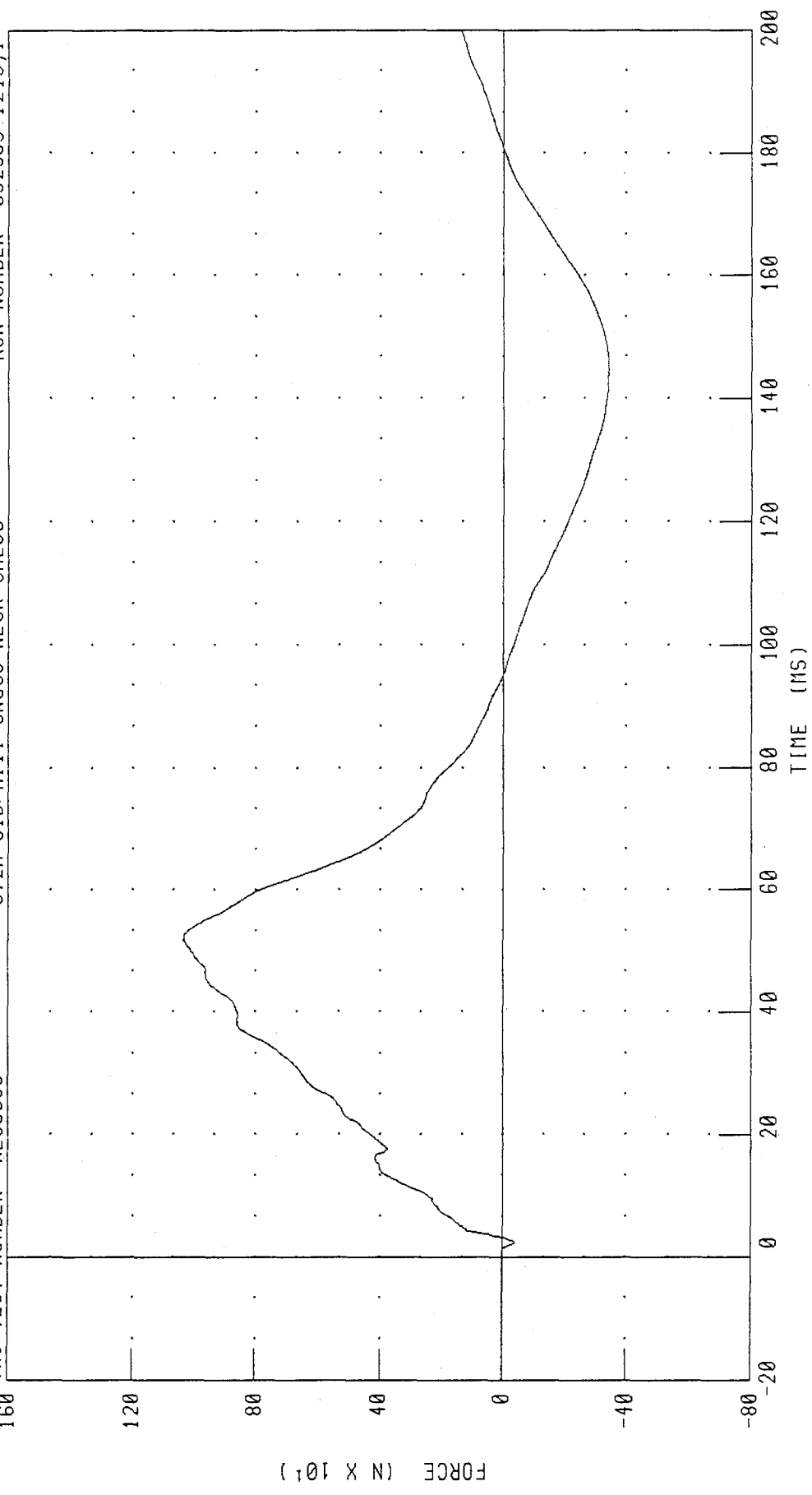
CHANNEL: TOTAN FILTER: CH. CLASS 60

ANGLE (°)

572M H3/SID DUMMY CALIBRATION -- LEFT LATERAL NECK TEST

NECK FORCE Y AXIS

TRC TEST NUMBER: NL05508 572M SID/HIII SN055 NECK CAL08 RUN NUMBER: 092903 1215;1



CHANNEL: NEKYF FILTER: CH. CLASS 1000 PEAK DATA: 1034.29 N @ 51.84 MS; -346.68 N @ 143.92 MS

572M H3/SID DUMMY CALIBRATION -- LEFT LATERAL NECK TEST

NECK MOMENT X AXIS

TRC TEST NUMBER: NL05508

572M SID/HIII SN055 NECK CAL08

RUN NUMBER: 092903.1215;1

160

120

80

40

0

-40

-80

TORQUE (N·M)

TIME (MS)

200

180

160

140

120

100

80

60

40

20

0

-20

CHANNEL: NEKXM FILTER: CH CLASS 600

PEAK DATA: 69.05 N·M @ 47.44 MS, -22.31 N·M @ 8.64 MS

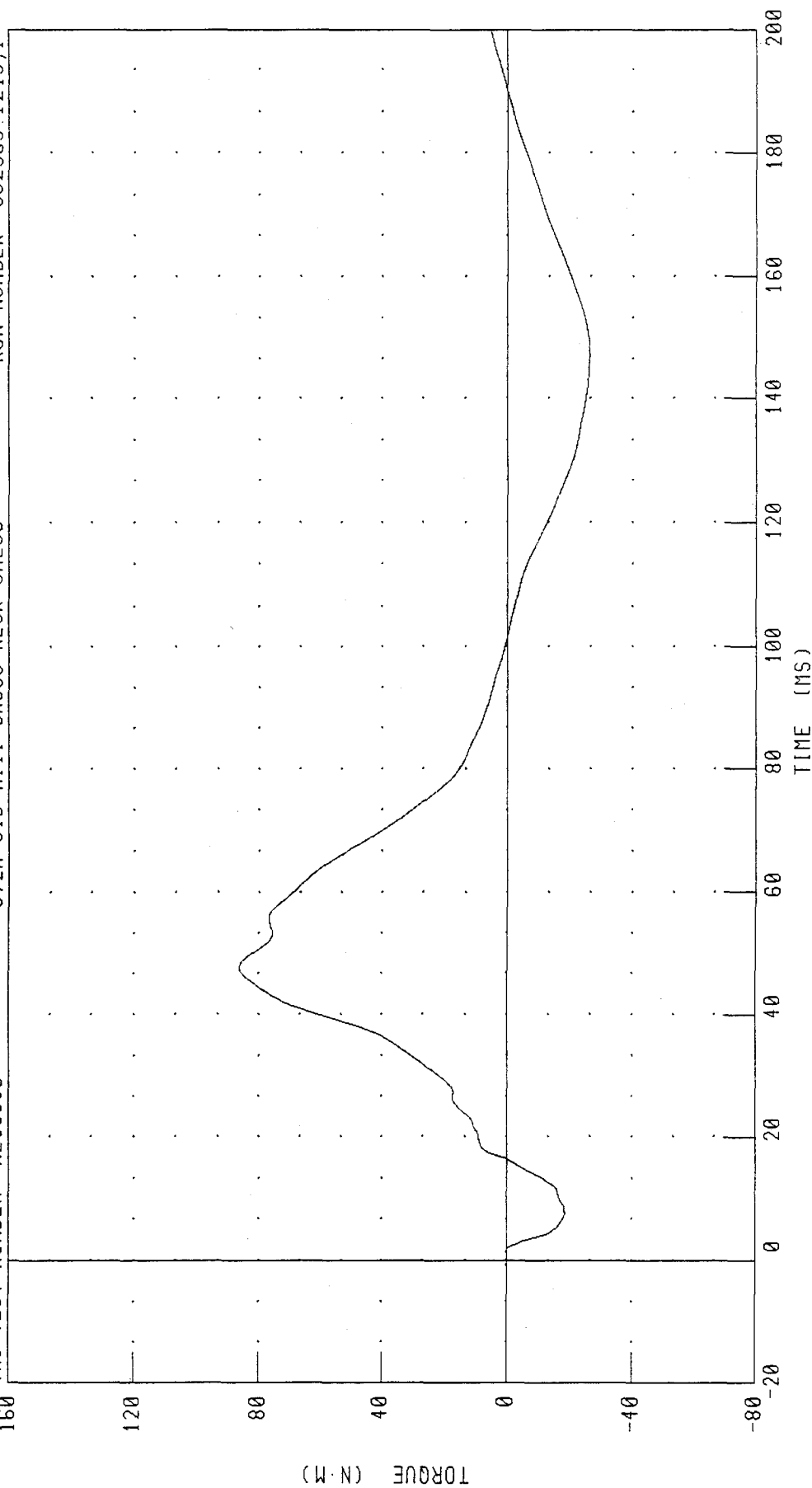
572M H3/SID DUMMY CALIBRATION -- LEFT LATERAL NECK TEST

TOTAL MOMENT ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER: NL05508

572M SID/HIII SN055 NECK CAL08

RUN NUMBER: 092903 1215,1



CHANNEL: NEKOM FILTER: CH. CLASS 600

PEAK DATA: 86.27 N M @ 47.60 MS, -26.38 N M @ 147.28 MS

TRANSPORTATION RESEARCH CENTER INC.

PART 572B LUMBAR FLEXION TEST

SID HIII

CAL DATE: 23-Sep-03

TRC, INC. TEST NO: LF05508C SID/HIII SN 055 TORSO FLEX CAL 08

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9 – 25.6° C	21.2 °C
RELATIVE HUMIDITY	10 – 70 %	51 %
FORCE AT 0 DEG. FLEXION	-27 – 27 N	0 N
FORCE AT 20 DEG OF FLEXION	98 – 151 N	129.0 N
FORCE AT 30 DEG OF FLEXION	151 – 205 N	169.0 N
FORCE AT 40 DEG OF FLEXION	205 – 258 N	206.8 N
NET RETURN ANGLE AFTER 3 MINUTES	< 12 °	3 °

TEST MEETS SPECIFICATIONS

TECHNICIAN V. Z. Walter

Transportation Research Center Inc.

572B Abdomen Compression Test

SID HIII Serial No. 055 Calibration No. 08 - 4

Test Date 02/28/2003

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	52 %	Yes
Displacement Rate	6.35 - 8.89 mm/s	6.8 - 7.9 mm/s	Yes
Data Within Required Corridor	Yes	Yes	Yes

Comments:

Technician

John K. Christie

Approved

V. J. Wether

09.23.2003 15:52:58 45

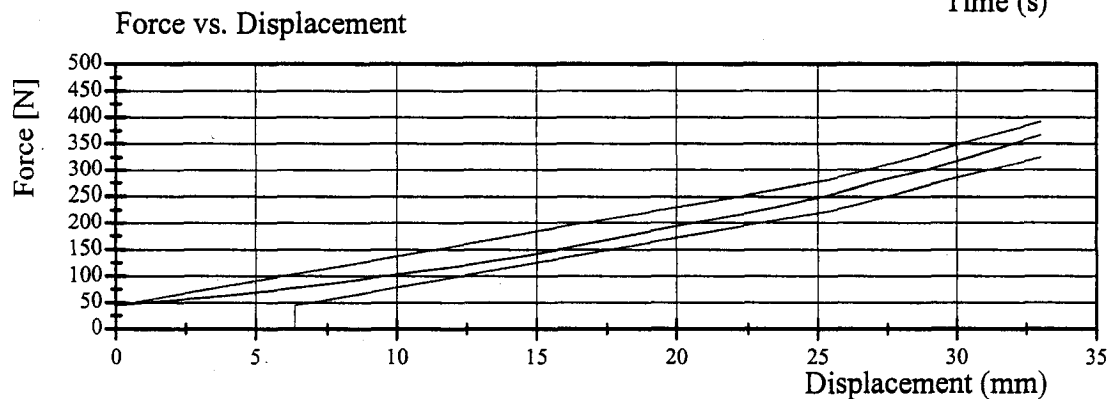
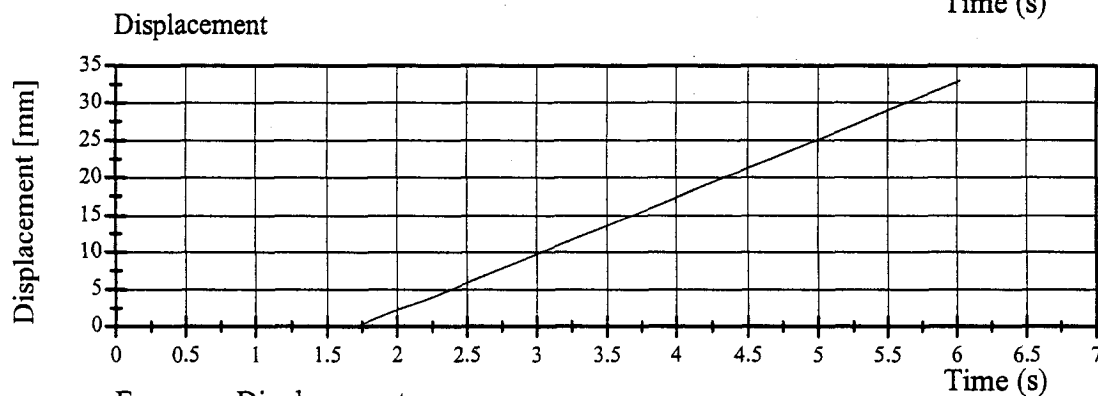
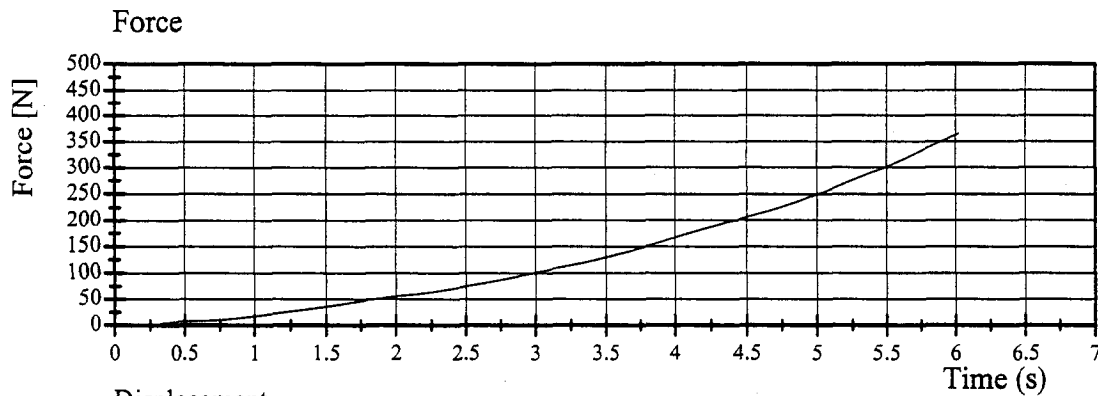


Transportation Research Center Inc.

572B Abdomen Compression Test

SID HIII Serial No. 055 Calibration No. 08 - 4

Test Date 02/28/2003



09.23.2003 15:52:59 45



TRANSPORTATION RESEARCH CENTER INC.

THORACIC SHOCK ABSORBER TESTS

SIDE IMPACT DUMMY

15-SEP-03

TRC INC.

572F SN055 DAMPER TEST CAL07

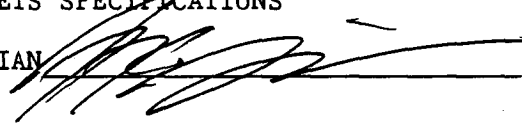
TEST NUMBERS: DP05507A,DP05507B,DP05507C

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		18.9 - 25.5 C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	65.0 %
VELOCITY	FORCE	667 - 925 N	806 N
2.74 M/S	DISPLACEMENT	29.7 - 34.5 MM	29.8 MM
VELOCITY	FORCE	1706 - 2072 N	1858 N
4.24 M/S	DISPLACEMENT	31.6 - 37.2 MM	32.8 MM
VELOCITY	FORCE	4116 - 4880 N	4562 N
6.38 M/S	DISPLACEMENT	33.5 - 39.8 MM	36.0 MM

DAMPER SETTING = 6.5

TEST MEETS SPECIFICATIONS

TECHNICIAN



RUN NUMBER: 091503.1426;1

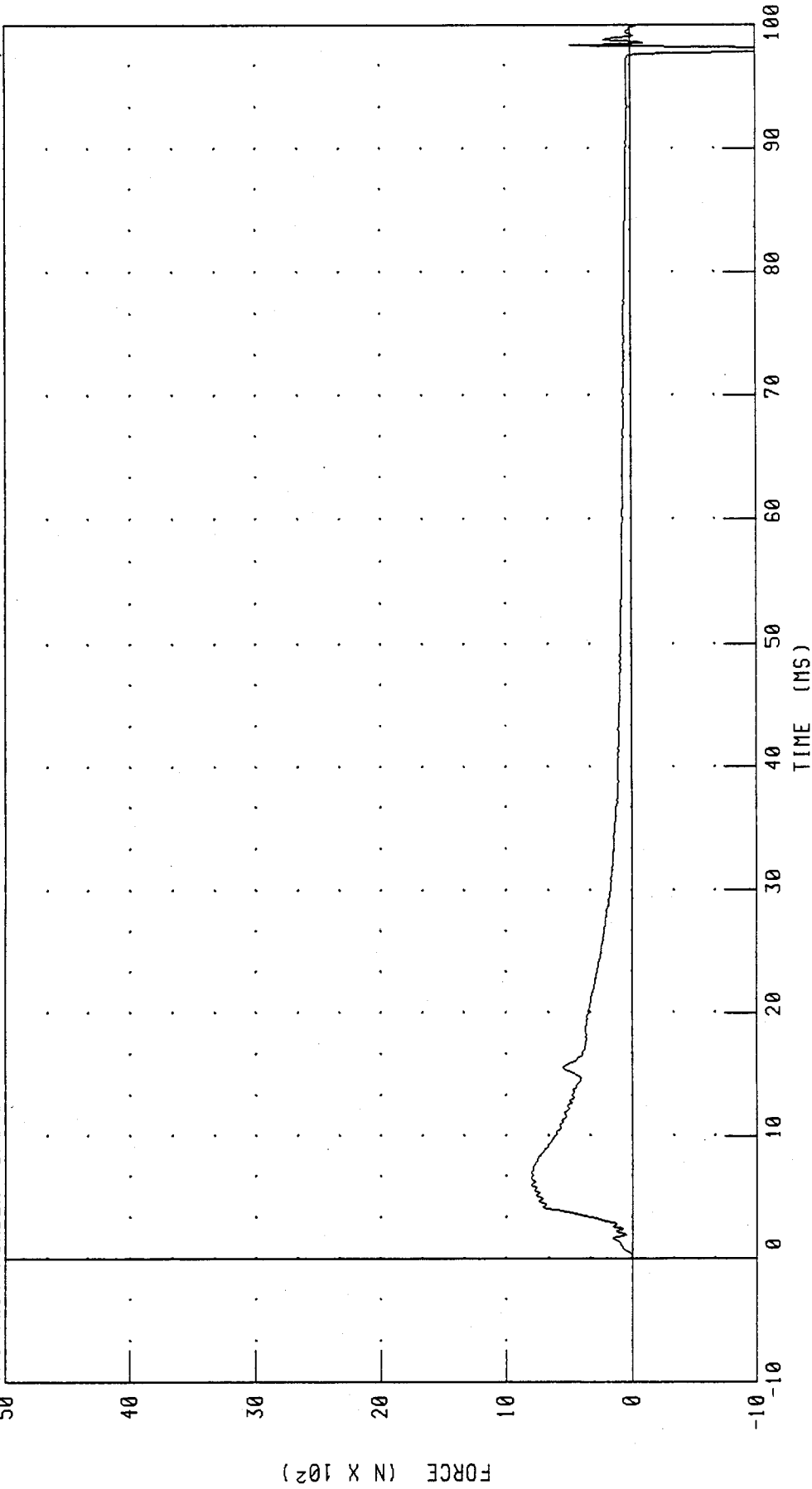
PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (3.0 M/SEC)

SHOCK ABSORBER RESISTIVE FORCE

TRC TEST NUMBER: DP05507A

572F SN055 DAMPER TEST CAL07

RUN NUMBER: 091503.1427,1



CHANNEL: DAMPF

FILTER: CH. CLASS 1000

PEAK DATA: 805.97 N @ 6.48 MS, -2638.27 N @ 97.92 MS

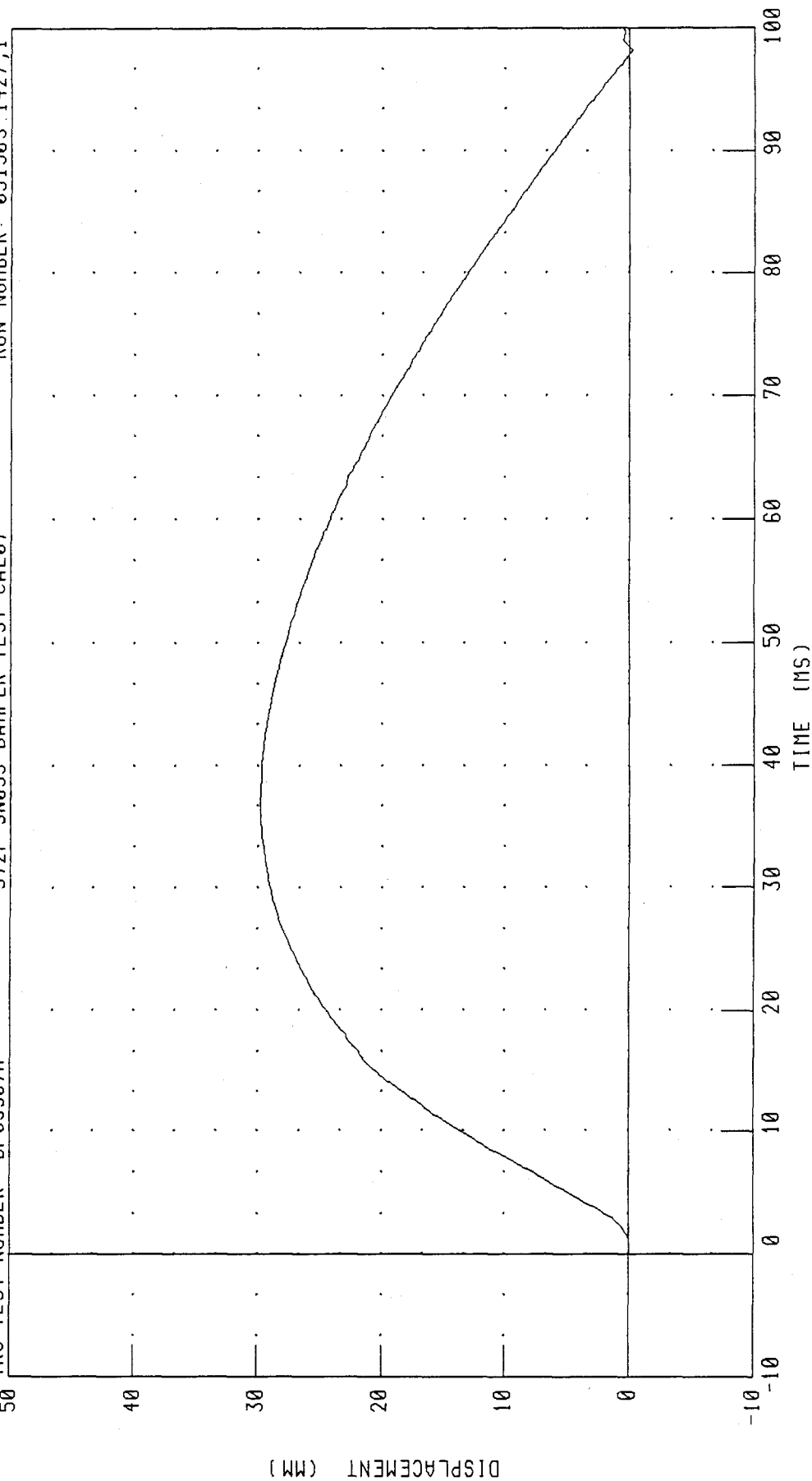
PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (3.0 M/SEC.)

SHOCK ABSORBER DISPLACEMENT

TRC TEST NUMBER: DP05507A

572F SN055 DAMPER TEST CAL07

RUN NUMBER: 091503.1427,1



CHANNEL: CSTYD FILTER: CH. CLASS 1000

PEAK DATA: 29.76 MM @ 35.92 MS; -0.24 MM @ 98.16 MS

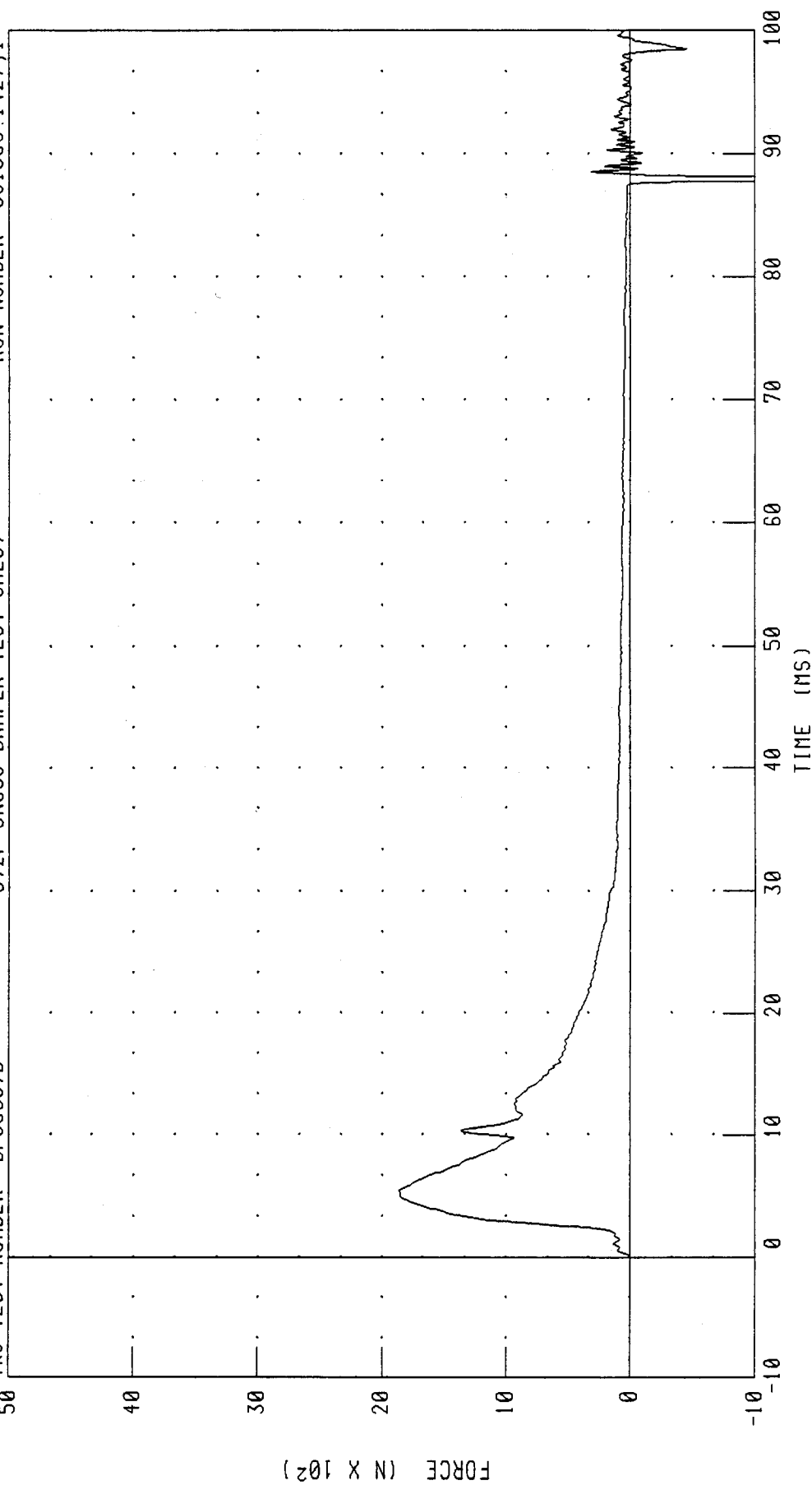
PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (4.3 M/SEC)

SHOCK ABSORBER RESISTIVE FORCE

TRC TEST NUMBER: DP05507B

572F SN055 DAMPER TEST CAL07

RUN NUMBER: 091503.1427,1



CHANNEL: DAMPF FILTER: CH. CLASS 1000

PEAK DATA: 1857.92 N @ 5.36 MS, -2558.33 N @ 88.00 MS

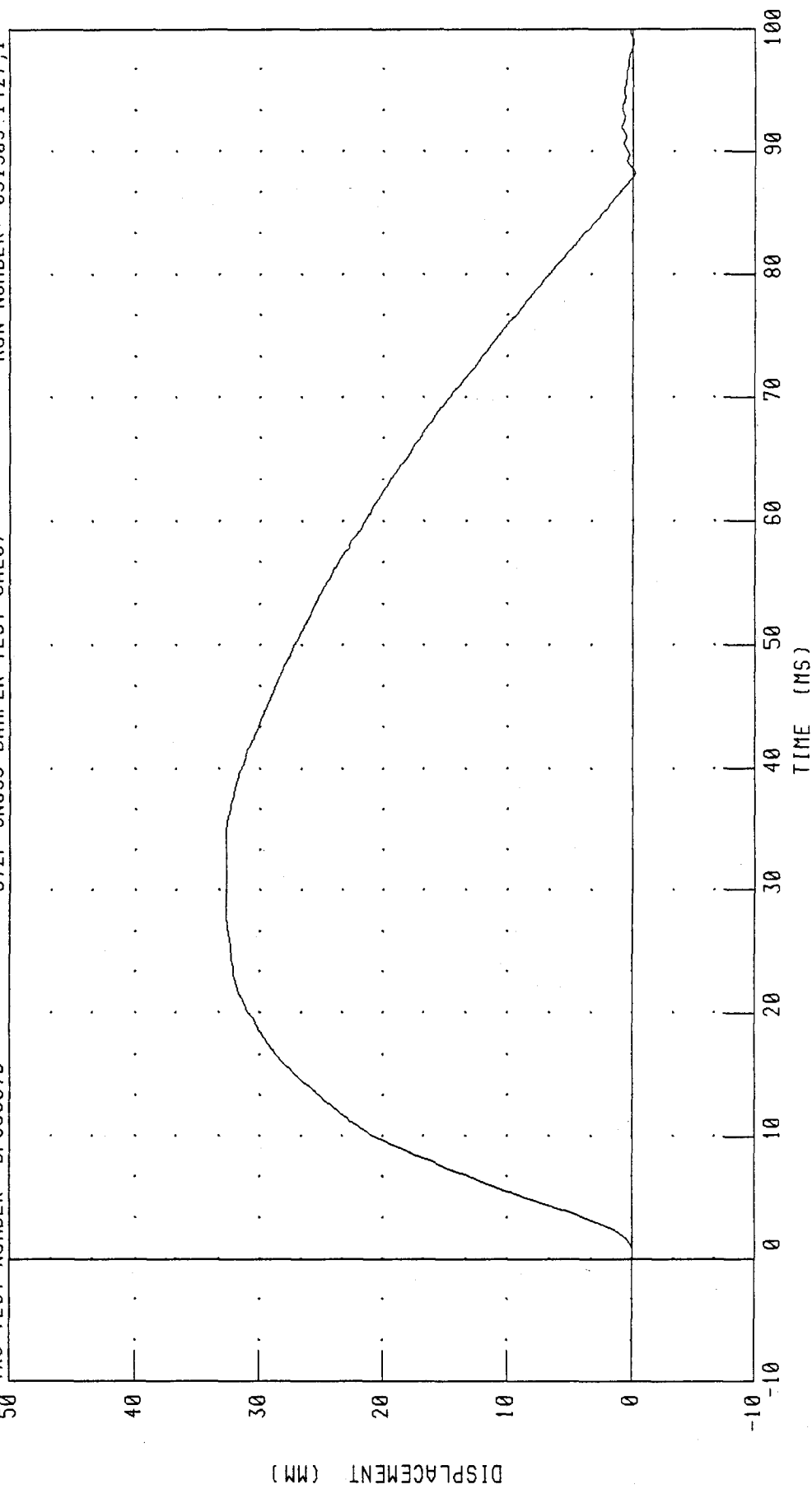
PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (4.3 M/SEC)

SHOCK ABSORBER DISPLACEMENT

TRC TEST NUMBER: DP05507B

572F SN055 DAMPER TEST CAL07

RUN NUMBER: 091503.1427,1



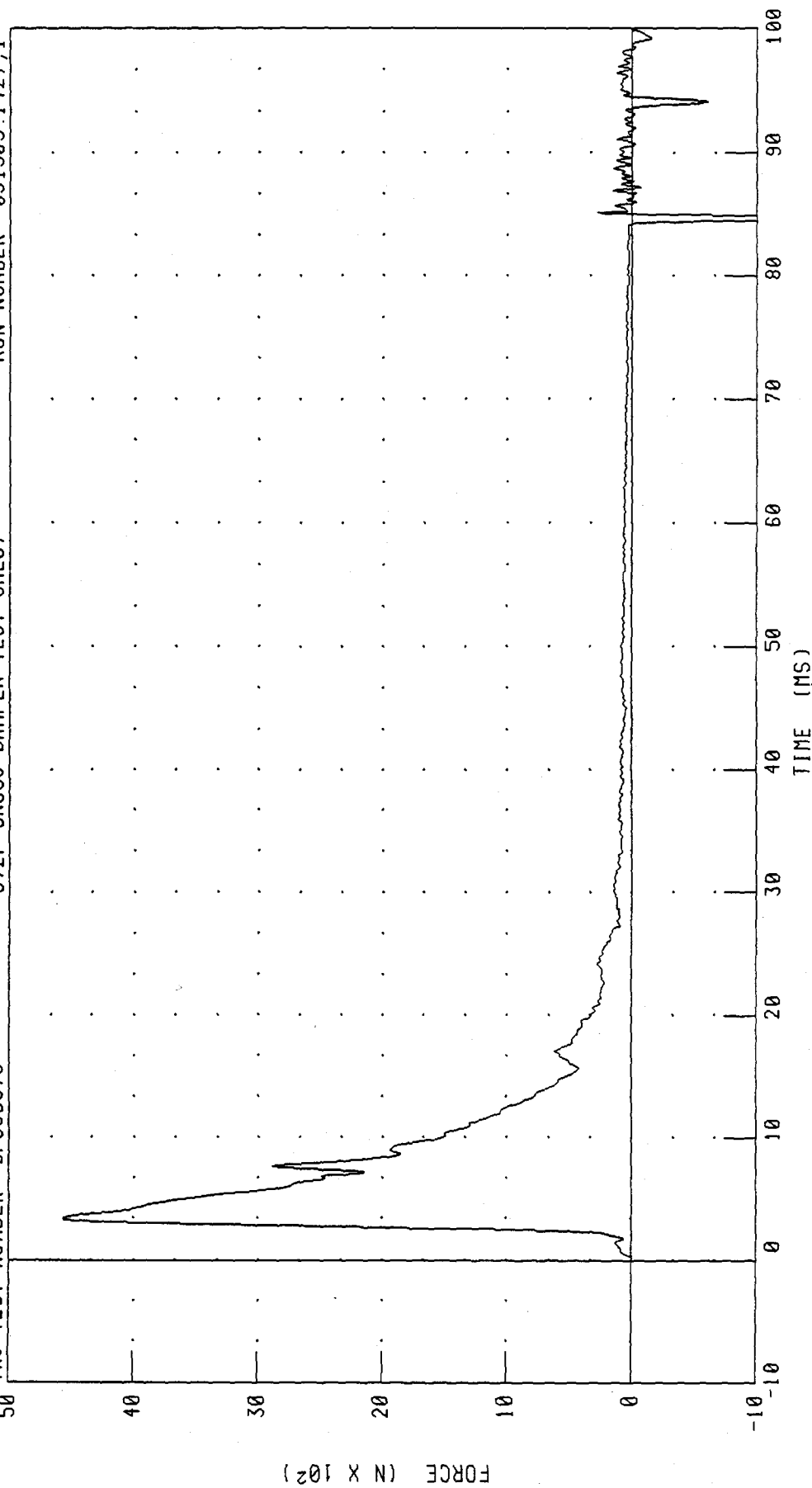
CHANNEL: CSTYD FILTER: CH. CLASS 1000

PEAK DATA: 32.77 MM @ 31.20 MS, -0.23 MM @ 88.24 MS

PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (6.1 M/SEC)
SHOCK ABSORBER RESISTIVE FORCE
572F SN055 DAMPER TEST CAL07

TRC TEST NUMBER: DP05507C

RUN NUMBER: 091503.1427.1



CHANNEL: DAMPF FILTER: CH. CLASS 1000

PEAK DATA: 4562.46 N @ 3.28 MS; -2683.85 N @ 84.72 MS

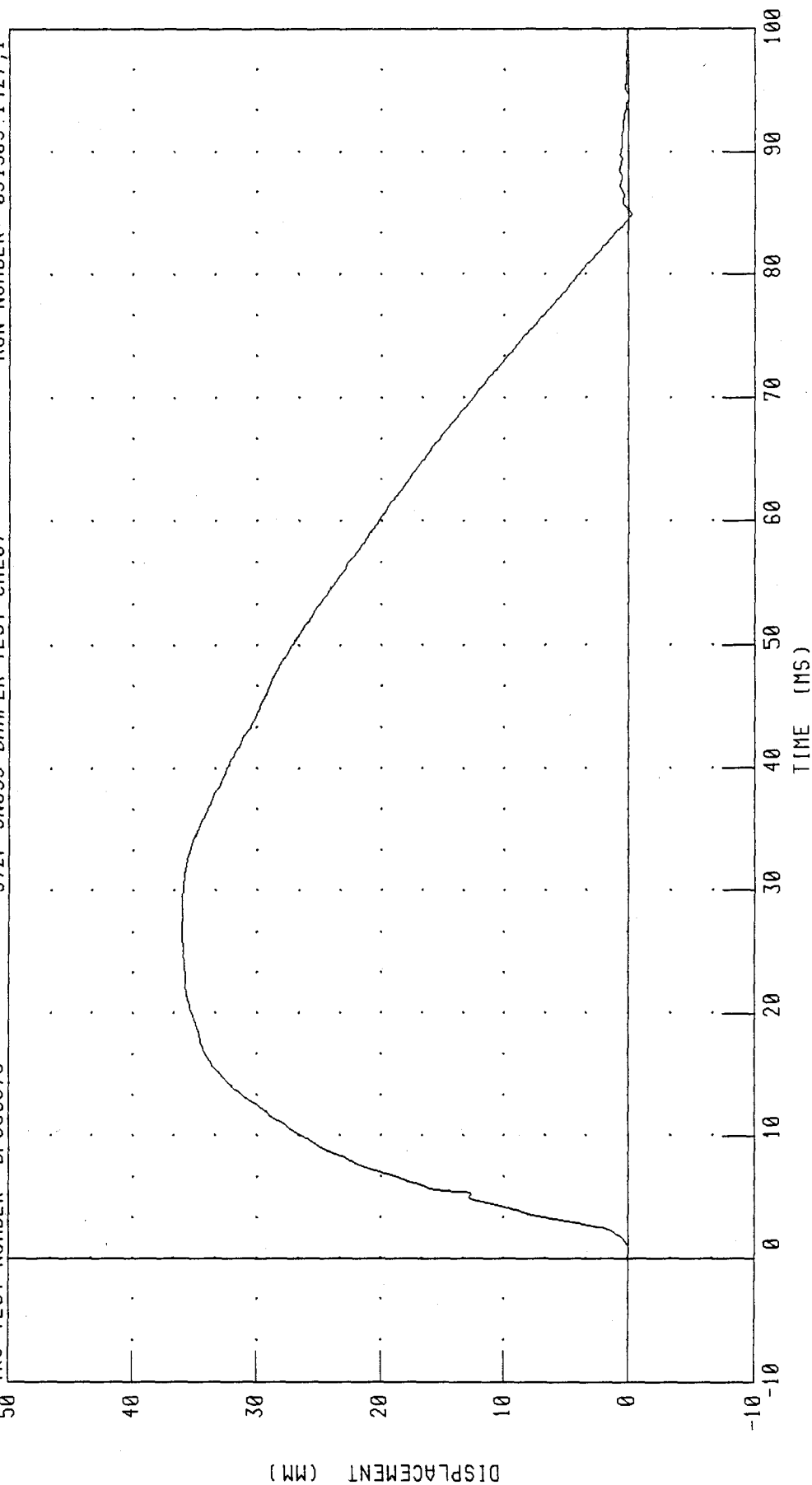
PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (6.1 M/SEC)

SHOCK ABSORBER DISPLACEMENT

TRC TEST NUMBER: DP05507C

572F SN055 DAMPER TEST CAL07

RUN NUMBER: 091503.1427,1



PEAK DATA: 35.97 MM @ 27.76 MS, -0.28 MM @ 84.88 MS

CHANNEL: CSTYD FILTER: CH. CLASS 1000

TRANSPORTATION RESEARCH CENTER INC.

LATERAL THORAX IMPACT TEST

SIDE IMPACT DUMMY

23-SEP-03

LEFT SIDE CONFIGURATION

TRC INC.

TEST NO: STL05508

SID/H3 SN055 L.THORAX CAL08

TEST PARAMETER	SPECIFICATION (ABSOLUTE VALUE)	TEST RESULTS
TEMPERATURE	18.9 - 25.5 C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	41.0 %
PENDULUM VELOCITY	4.27 - 4.33 M/S	4.29 M/S
PEAK ACCELERATION: UPPER RIB BAR	37 - 46 G	40.9 G
PEAK ACCELERATION: LOWER RIB BAR	37 - 46 G	39.8 G
PEAK ACCELERATION: LOWER THORACIC SPINE	15 - 22 G	19.3 G

TEST MEETS SPECIFICATIONS

TECHNICIAN

V.F. Wether

RUN NUMBER: 092703.1924;1

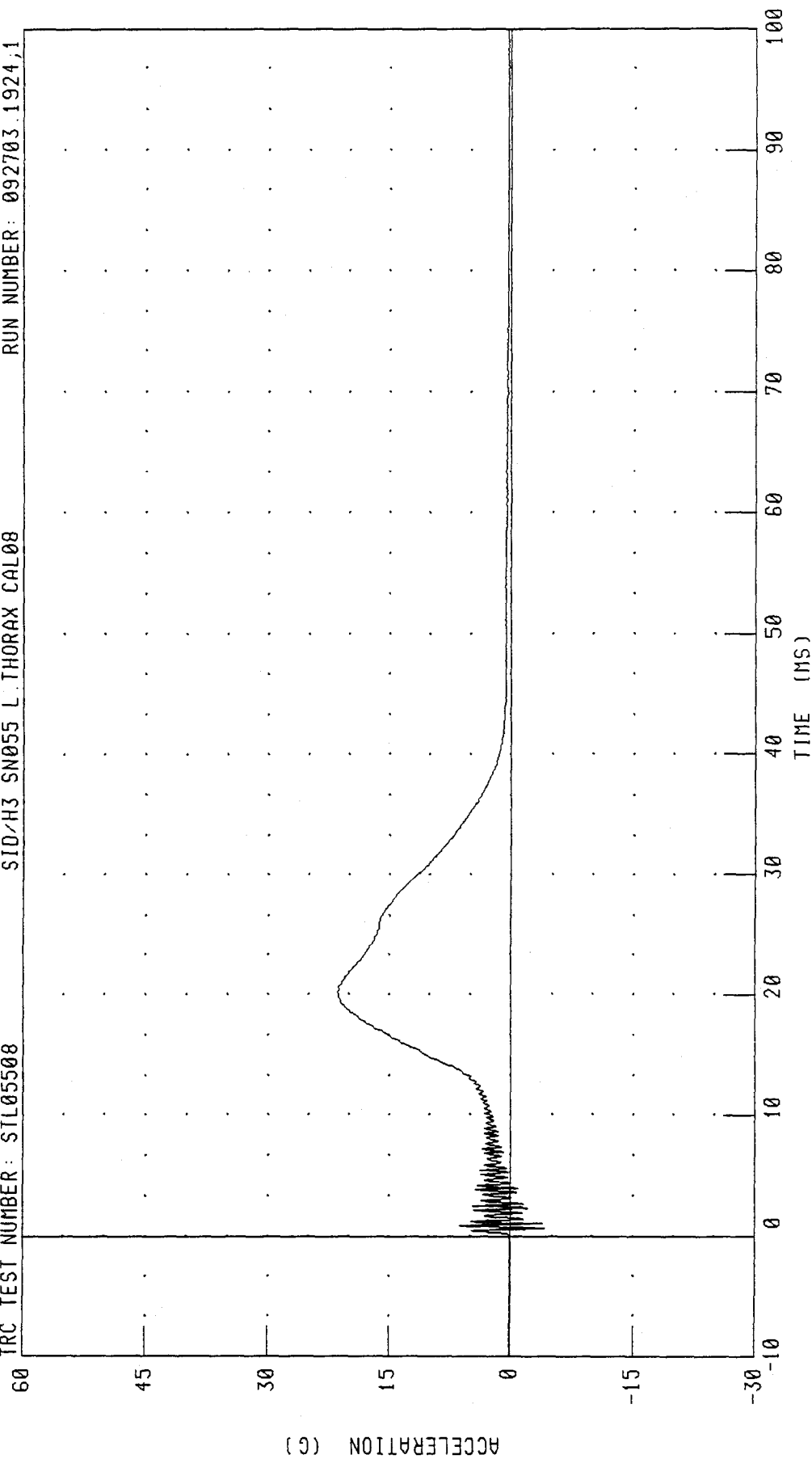
PART 572-F S.I.D. THORAX CALIBRATION - (LEFT SIDE IMPACT)

PENDULUM DECELERATION

TRC TEST NUMBER: STL05508

SID/H3 SN055 L THORAX CAL08

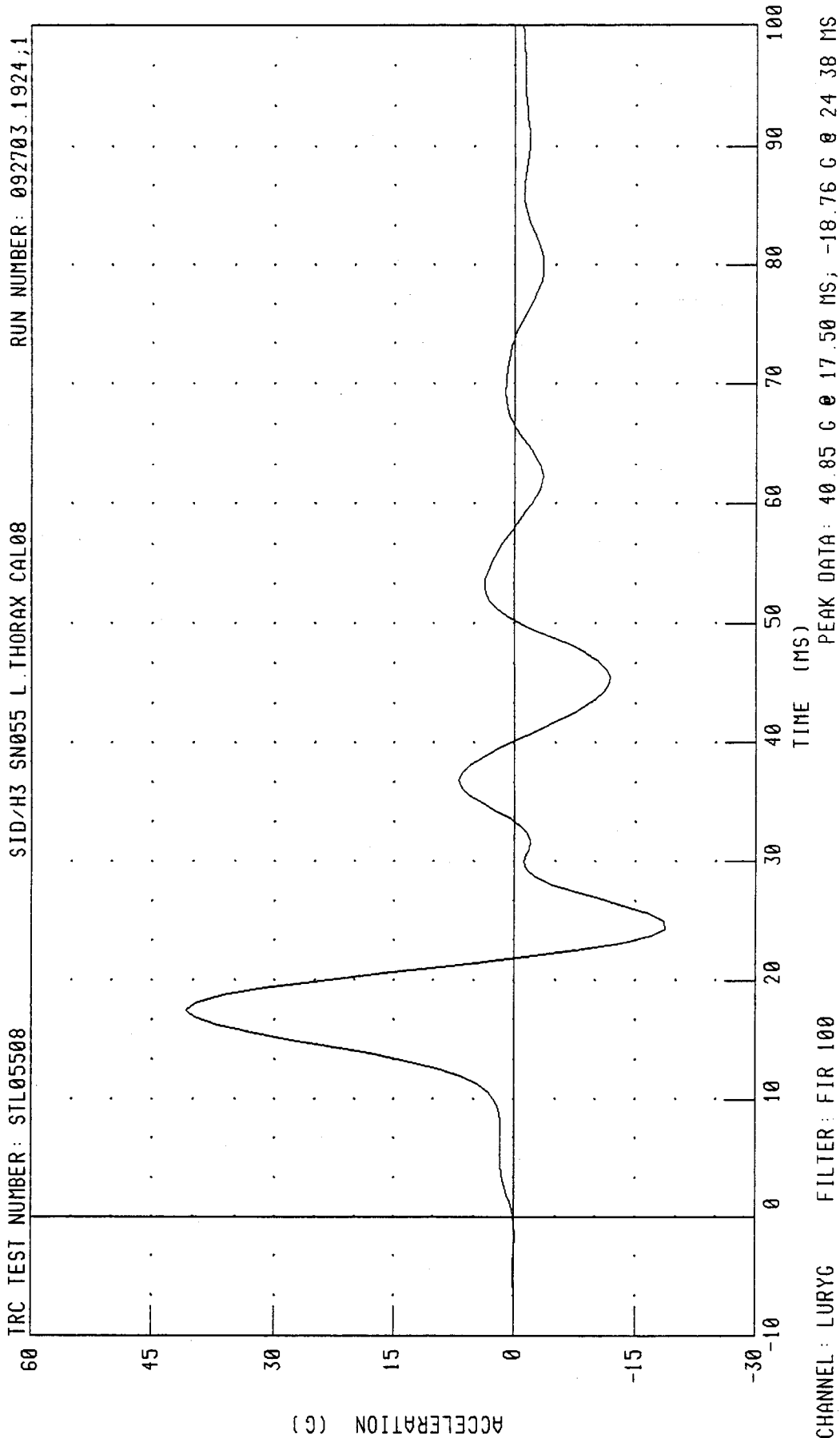
RUN NUMBER: 092703 1924.1



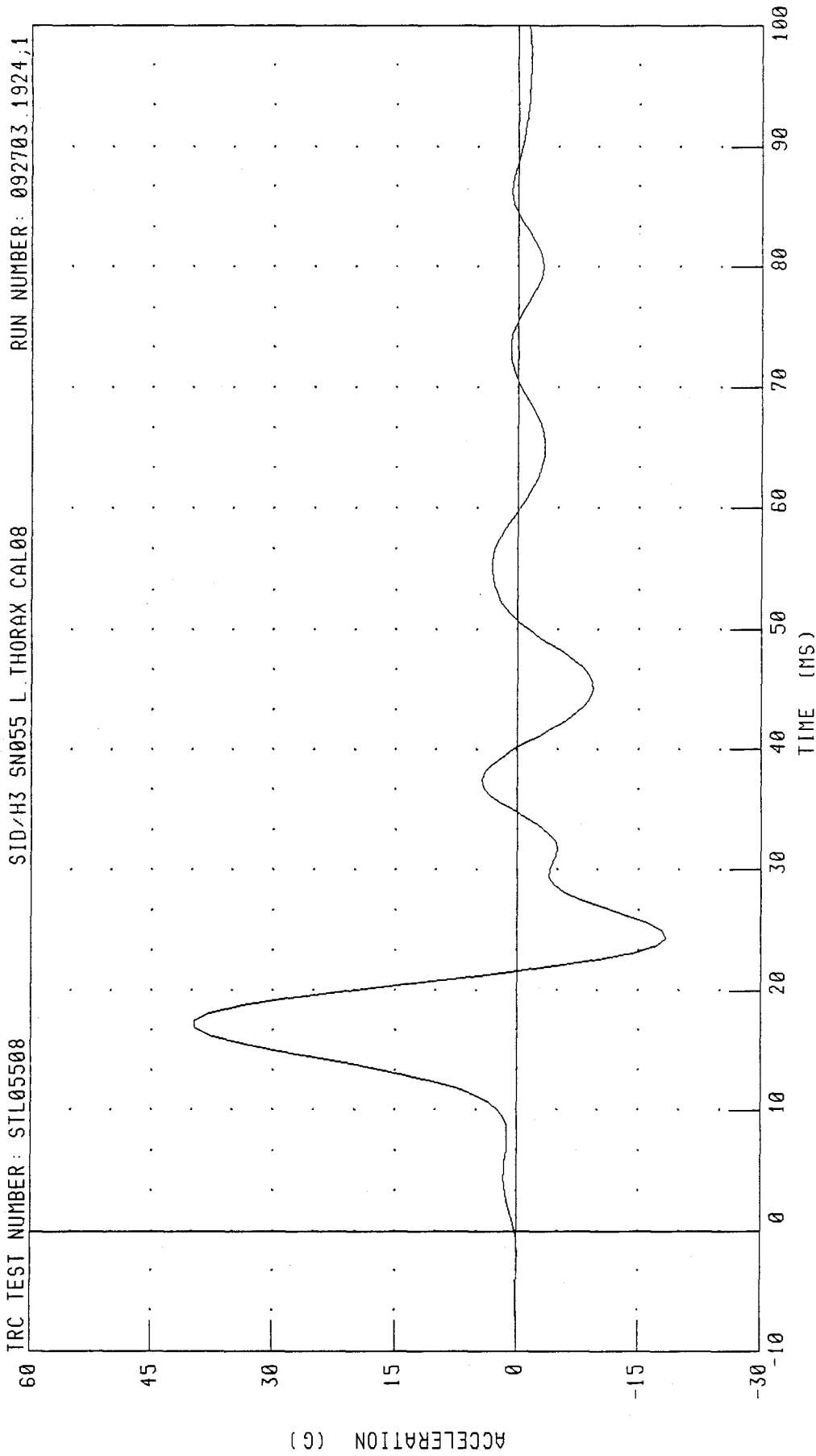
CHANNEL: PENXC FILTER: CH. CLASS 1000

PEAK DATA: 21.40 G @ 20.24 MS; -4.13 G @ 0.64 MS

PART 572-F S.I.D. THORAX CALIBRATION - (LEFT SIDE IMPACT)
LEFT UPPER RIB ACCELERATION Y AXIS



PART 572-F S.I.D. THORAX CALIBRATION - (LEFT SIDE IMPACT)
LEFT LOWER RIB ACCELERATION Y AXIS



PEAK DATA: 39.75 G @ 17.50 MS; -18.52 G @ 24.38 MS

CHANNEL: LLRYG FILTER: FIR 100

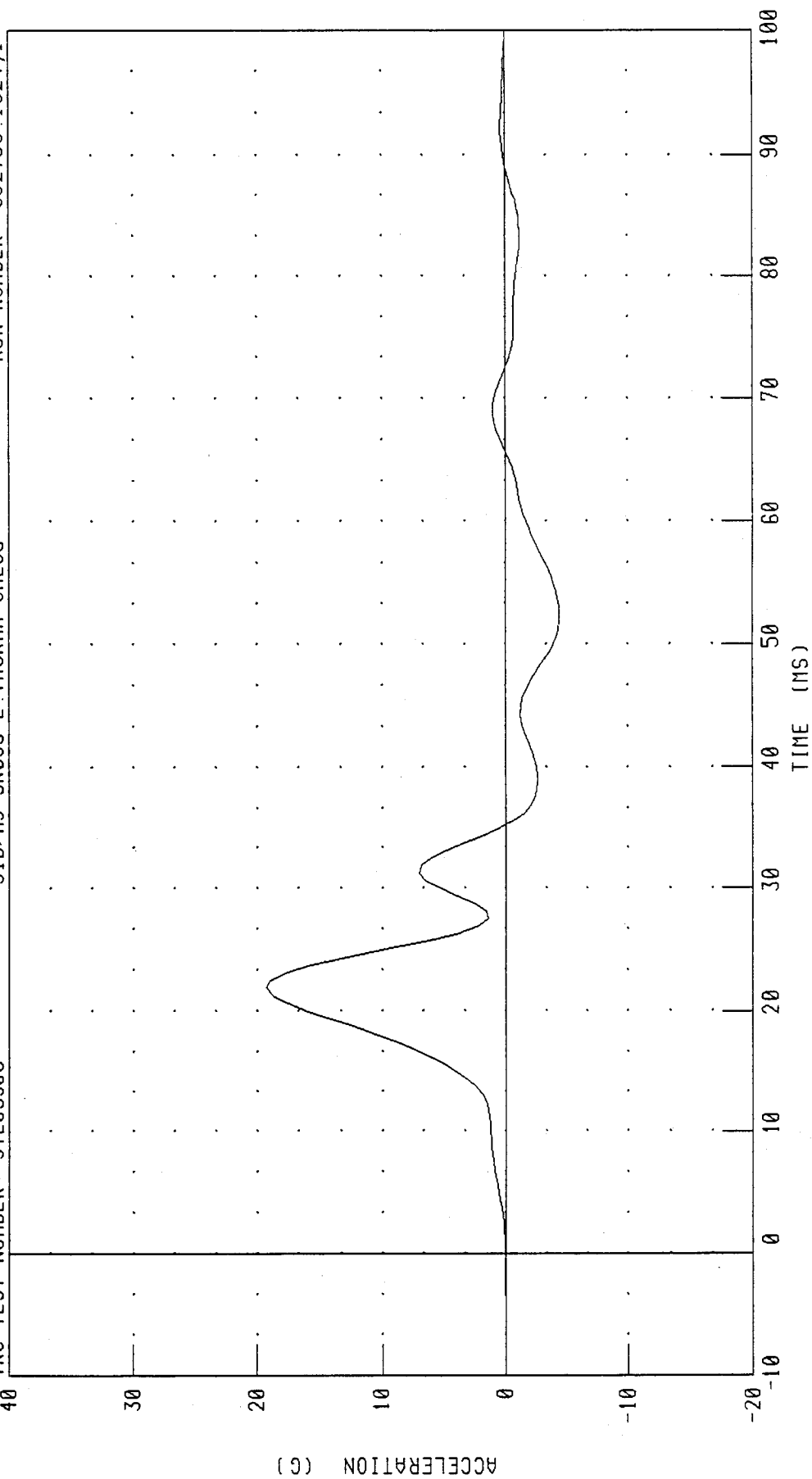
PART 572-F S.I.D. THORAX CALIBRATION - (LEFT SIDE IMPACT)

LOWER SPINE ACCELERATION Y AXIS

TRC TEST NUMBER: STL05508

SID/H3 SN055 L THORAX CAL08

RUN NUMBER: 092703.1924.1



CHANNEL: T12YC FILTER: FIR 100

PEAK DATA: 19 25 G @ 21.88 MS, -4.45 G @ 52.50 MS

TRANSPORTATION RESEARCH CENTER INC.

LATERAL PELVIS IMPACT TEST

SIDE IMPACT DUMMY

23-SEP-03

LEFT SIDE CONFIGURATION

TRC INC.

TEST NO: SPL05508

SID/H3 SN055 LEFT PELVIS CAL08

TEST PARAMETER	SPECIFICATION (ABSOLUTE VALUE)	TEST RESULTS
TEMPERATURE	18.9 - 25.5 C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	40.0 %
PENDULUM VELOCITY	4.27 - 4.33 M/S	4.27 M/S
PEAK PELVIC ACCELERATION	40 - 60 G	44.2 G
TIME ABOVE 20 G LEVEL	3 - 7 MS	6.0 MS
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

TECHNICIAN

V. J. Watters

RUN NUMBER: 092703.1916;1

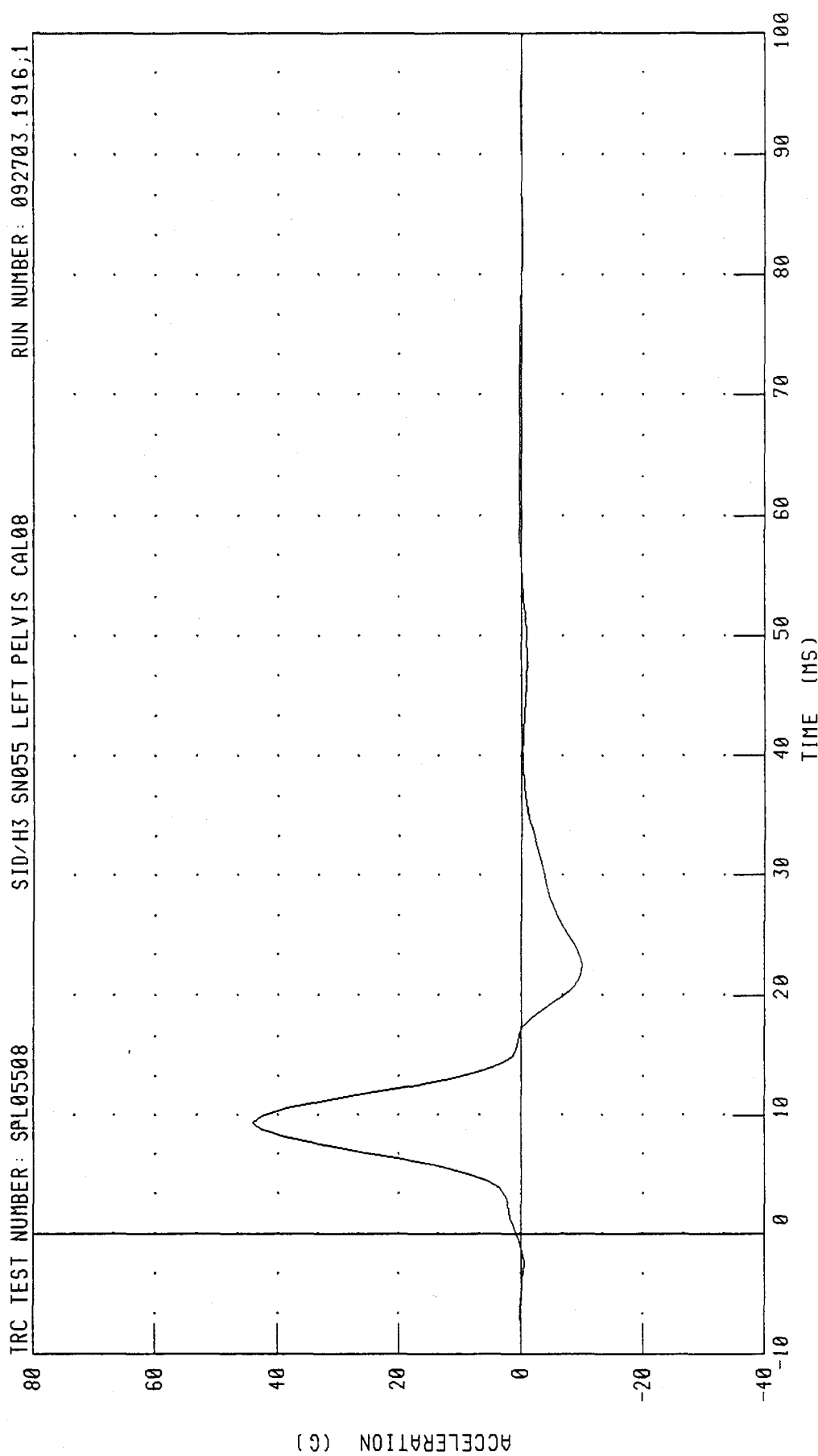
PART 572-F S.I.D. PELVIS CALIBRATION - (LEFT SIDE IMPACT)

PELVIS ACCELERATION Y AXIS

TRC TEST NUMBER: SPL05508

SID/H3 SN055 LEFT PELVIS CAL08

RUN NUMBER: 092703.1916.1

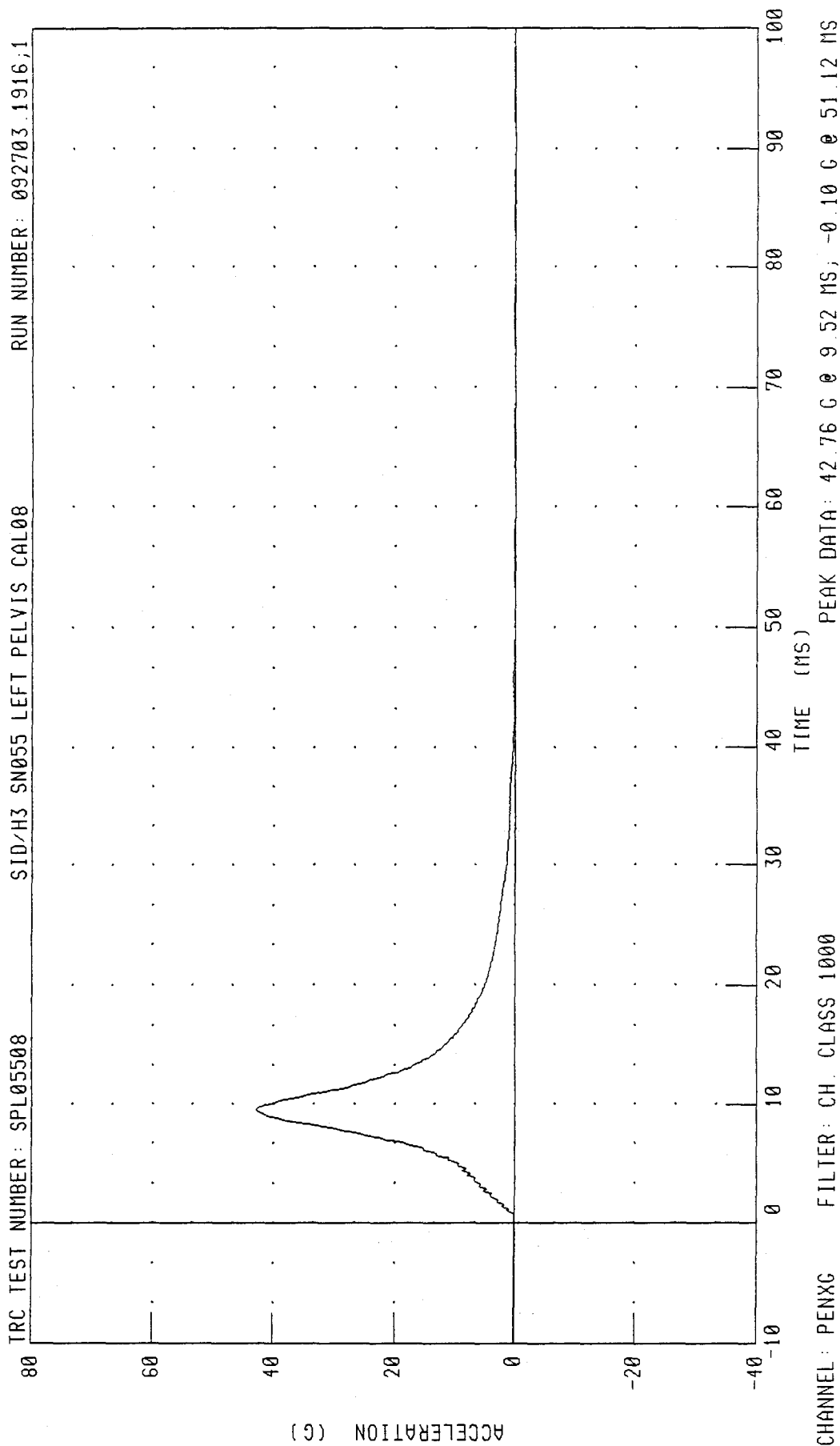


CHANNEL: PEVYC FILTER: FIR 100

PEAK DATA: 44.17 G @ 9.37 MS; -9.98 G @ 22.50 MS

PART 572-F S.I.D. PELVIS CALIBRATION - (LEFT SIDE IMPACT)

PENDULUM DECELERATION



Calibration Test Results

Pre-Test

SID HIII: 906

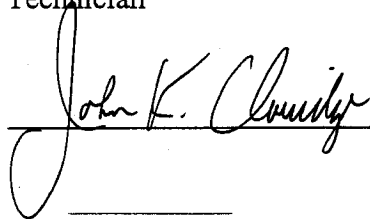
Configured for Left Side Impact

External Dimensions:	The dummy passed all external dimension requirements.
Lateral Head Drop Test:	The head passed all lateral drop test requirements.
Lateral Neck Test:	The neck passed all impact test requirements.
Lateral Thorax Impact Test:	The thorax passed all impact test requirements.
Lumbar Flexion Test:	The dummy met the lumbar flexion test requirements.
Abdominal Compression Test:	The abdomen met the compression test requirements.
Pelvis Impact Test:	The lateral pelvis passed all impact test requirements.
Thoracic Shock Absorber Test:	The thoracic shock absorber passed all test requirements.

Transportation Research Center Inc.
SID/HIII Dummy
External Dimensions
Serial No. 906 Calibration No. 02

Test Parameter	Dimension	Specification	Results	Pass
Seated Height	SH	889.0 - 909.3 mm	901 mm	Yes
Rib Height	RH	501.7 - 520.7 mm	511 mm	Yes
Hip Pivot Height	HP	99.1 REF mm	99.1 mm	
Rib From Backline	RD	228.6 - 241.3 mm	229 mm	Yes
Knee Pivot From Backline	KH	510.5 - 525.8 mm	513 mm	Yes
Knee Pivot From Floor	KV	490.2 - 505.5 mm	496 mm	Yes
Hip Width	HW	355.6 - 391.2 mm	370 mm	Yes
Top Rib Width From C/L	RW-1	165.1 - 180.3 mm	172 mm	Yes
Bottom Rib Width From C/L	RW-2	165.1 - 180.3 mm	173 mm	Yes
Difference Between Top & Bottom Rib Width from C/L		<= 2.5 mm	1.0 mm	Yes

Technician



Approved





TRANSPORTATION RESEARCH CENTER INC.

LATERAL HEAD DROP TEST

HYBRIDIII SID DUMMY

12-SEP-03

LEFT SIDE CONFIGURATION

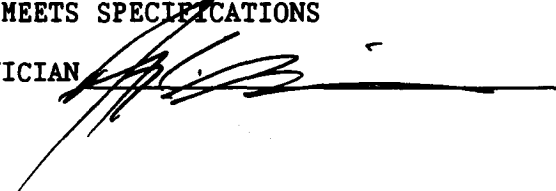
TRC INC.

TEST NO. HDL90602

572M SID/HIII SN906 HEAD CAL02

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9 - 25.6 deg. C	21.11 deg. C
RELATIVE HUMIDITY	10 - 70 %	62.00 %
PEAK RESULTANT ACCELERATION	120 - 150 G	131.10 G
PEAK LONGITUDINAL ACCELERATION	15 G MAX	8.74 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

TECHNICIAN 

RUN NUMBER: 100203.0721;1

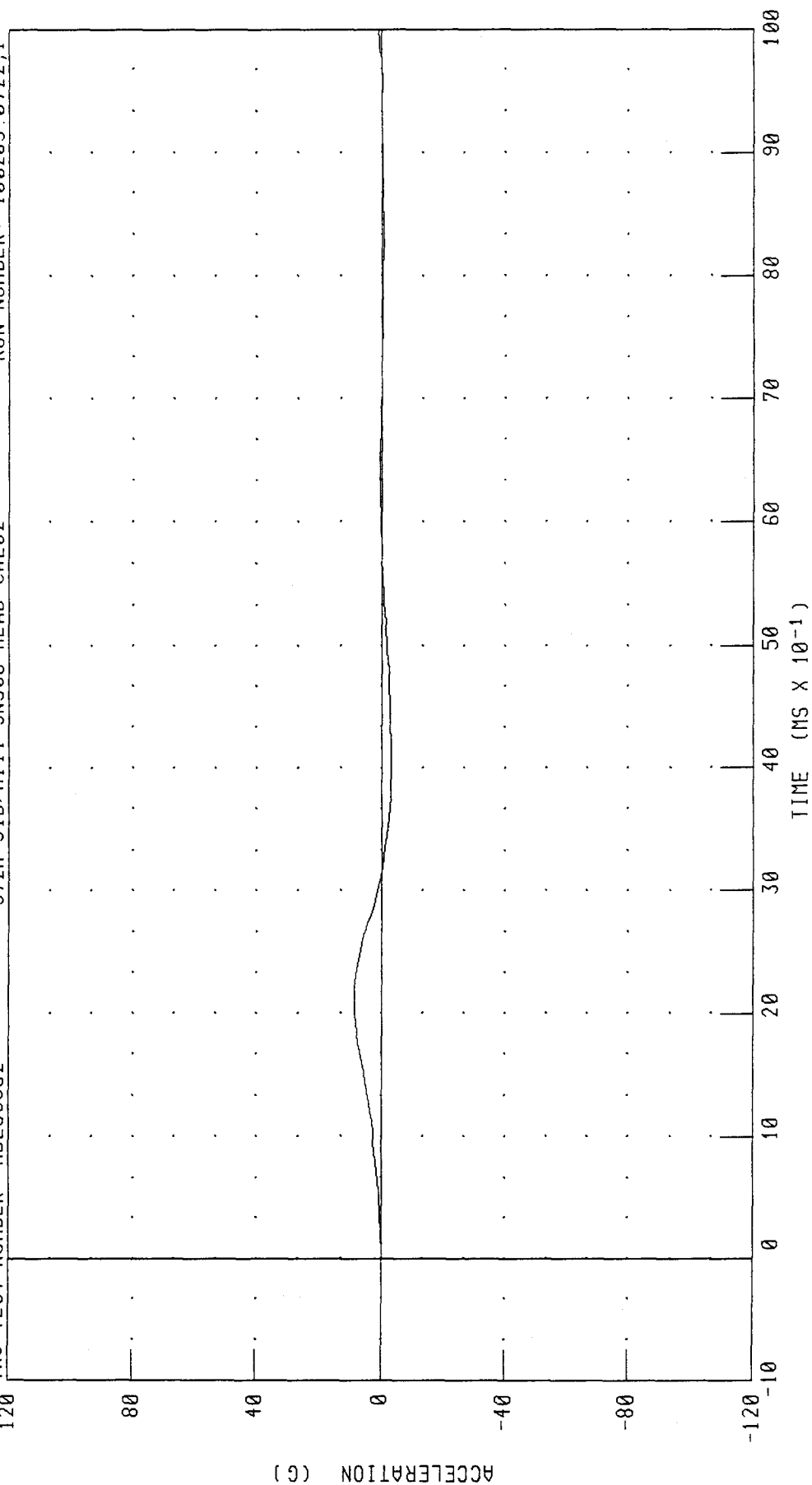
572M SID/HIII DUMMY CALIBRATION -- 35 DEGREE LEFT LATERAL HEAD DROP

HEAD ACCELERATION X AXIS

TRC TEST NUMBER: HDL90602

572M SID/HIII SN906 HEAD CAL02

RUN NUMBER: 100203 0722;1



CHANNEL: HEDXC FILTER: CH. CLASS 1000

PEAK DATA: 8.74 G @ 2.16 MS; -3.23 G @ 4.08 MS

572M SID/HIII DUMMY CALIBRATION -- 35 DEGREE LEFT LATERAL HEAD DROP

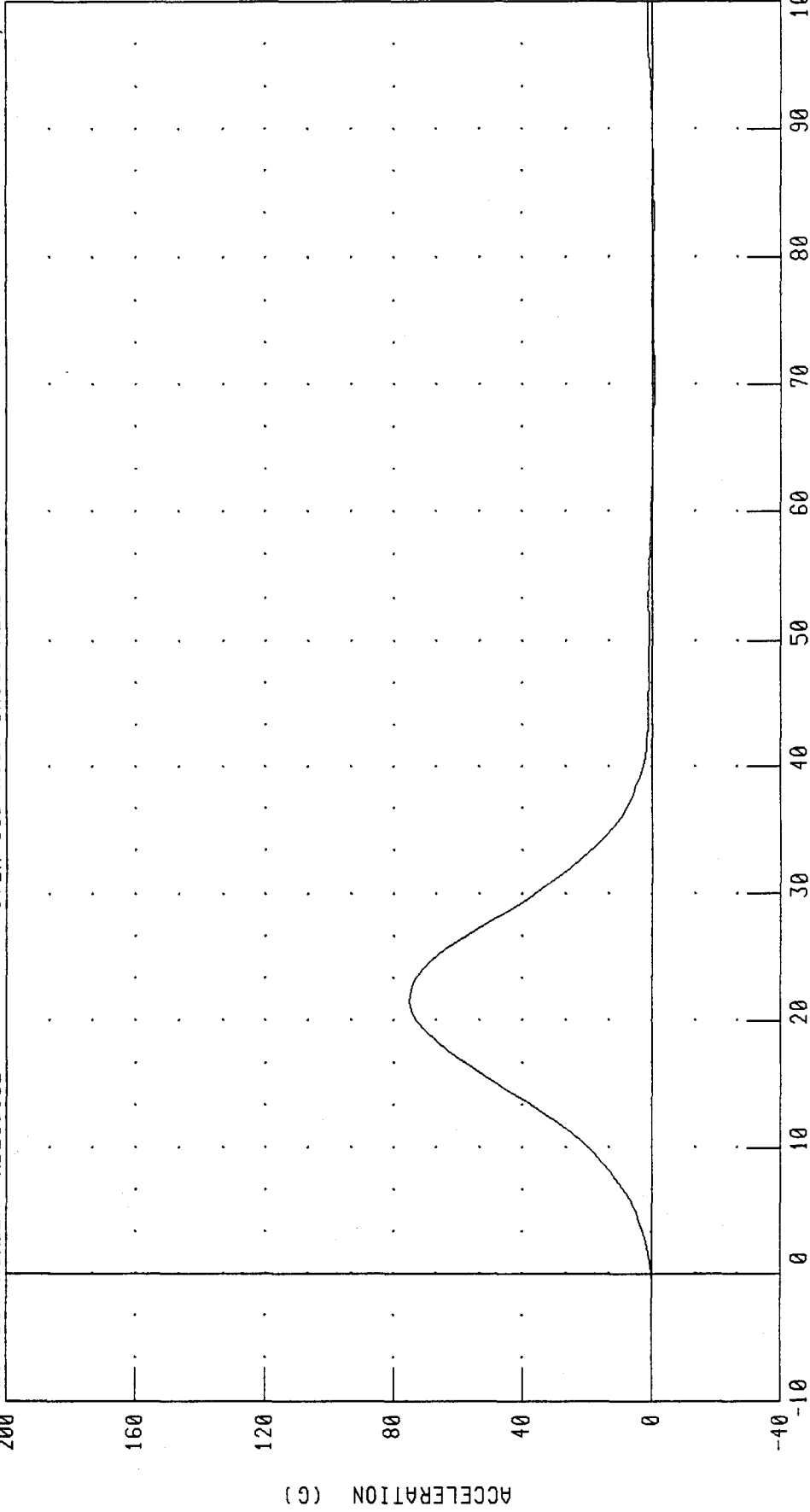
HEAD ACCELERATION Y AXIS

572M SID/HIII SN906 HEAD CAL02

TRC TEST NUMBER: HDL90602

200

RUN NUMBER: 100203 0722,1



TIME (MS X 10⁻¹)

CHANNEL: HEDYC FILTER: CH. CLASS 1000

PEAK DATA: 74.94 G @ 2.16 MS, -0.73 G @ 7.04 MS

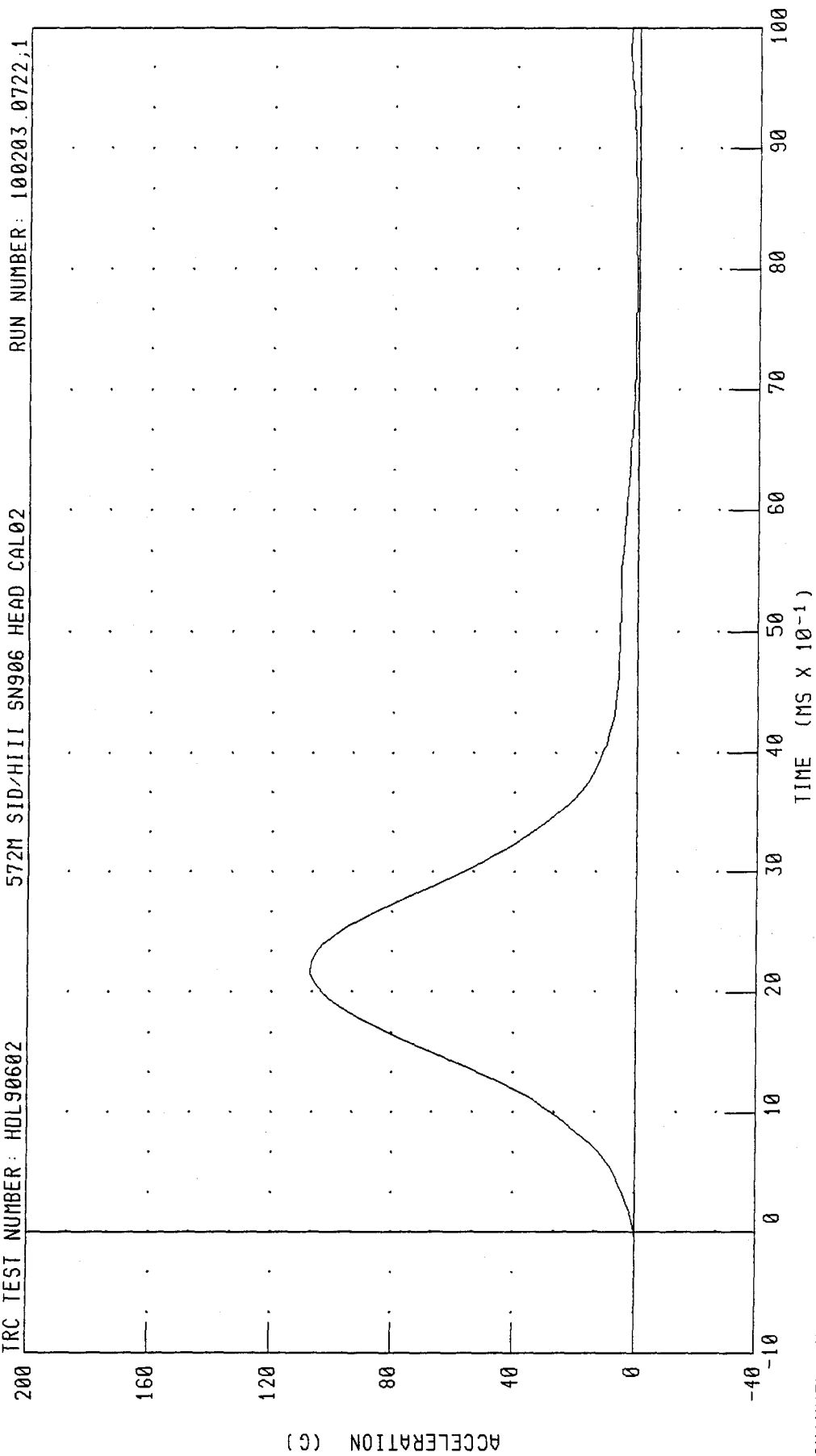
572M SID/HIII DUMMY CALIBRATION -- 35 DEGREE LEFT LATERAL HEAD DROP

HEAD ACCELERATION Z AXIS

TRC TEST NUMBER: HDL90602

572M SID/HIII SN906 HEAD CAL02

RUN NUMBER: 100203.0722,1



CHANNEL: HEDZG FILTER: CH. CLASS 1000

PEAK DATA: 107.22 G @ 2.16 MS; -0.08 G @ -0.96 MS

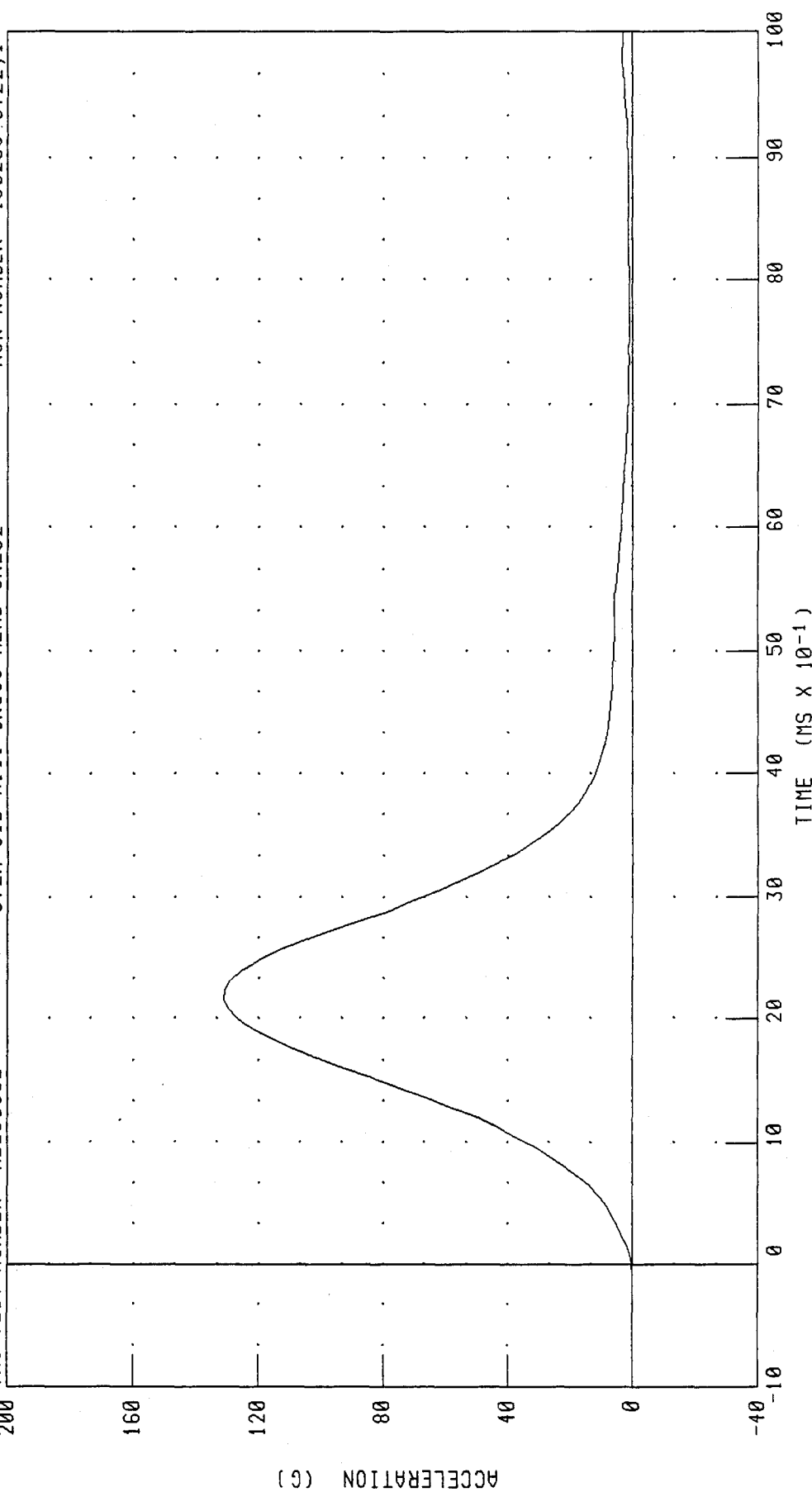
572M SID/HIII DUMMY CALIBRATION -- 35 DEGREE LEFT LATERAL HEAD DROP

HEAD RESULTANT ACCELERATION

TRC TEST NUMBER: HDL90602

572M SID/HIII SN906 HEAD CAL02

RUN NUMBER: 100203 0722;1



CHANNEL: HEORC FILTER: CH CLASS 1000

PEAK DATA: 131.10 G @ 2.16 MS; 0.03 G @ -0.72 MS

TRANSPORTATION RESEARCH CENTER INC.

LATERAL NECK TEST

HYBRIDIII SID DUMMY

11-SEP-03

LEFT SIDE CONFIGURATION

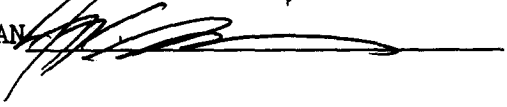
TRC INC.

TEST NO. NFL90602

572M SID/H3 SN906 NECK CAL02

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6 - 22.2 deg. C	21.11 deg. C
RELATIVE HUMIDITY		10 - 70 %	62.00 %
IMPACT VELOCITY		6.89 - 7.13 M/S	6.99 M/S
INTEGRATED VELOCITY	10 MS	1.96 - 2.55 M/S	2.46 M/S
	20 MS	4.12 - 5.10 M/S	4.84 M/S
	30 MS	5.73 - 7.01 M/S	6.70 M/S
	40 - 70 MS	6.27 - 7.64 M/S	7.12- 7.23 M/S
MAXIMUM MIDSAGGITAL PLANE ROTATION		66 - 82 deg.	68.66 deg.
ROTATION ANGLE DECAY TIME FROM PEAK TO ZERO		58 - 67 MS	61.12 MS
MAXIMUM MOMENT ABOUT OCCIPITAL CONDYLE		73 - 88 NM	78.20 NM
POSITIVE MOMENT DECAY TIME FROM PEAK TO ZERO		49 - 64 MS	54.56 MS
TIME OF MAXIMUM ROTATION AFTER MAXIMUM MOMENT		2 - 16 MS	8.80 MS

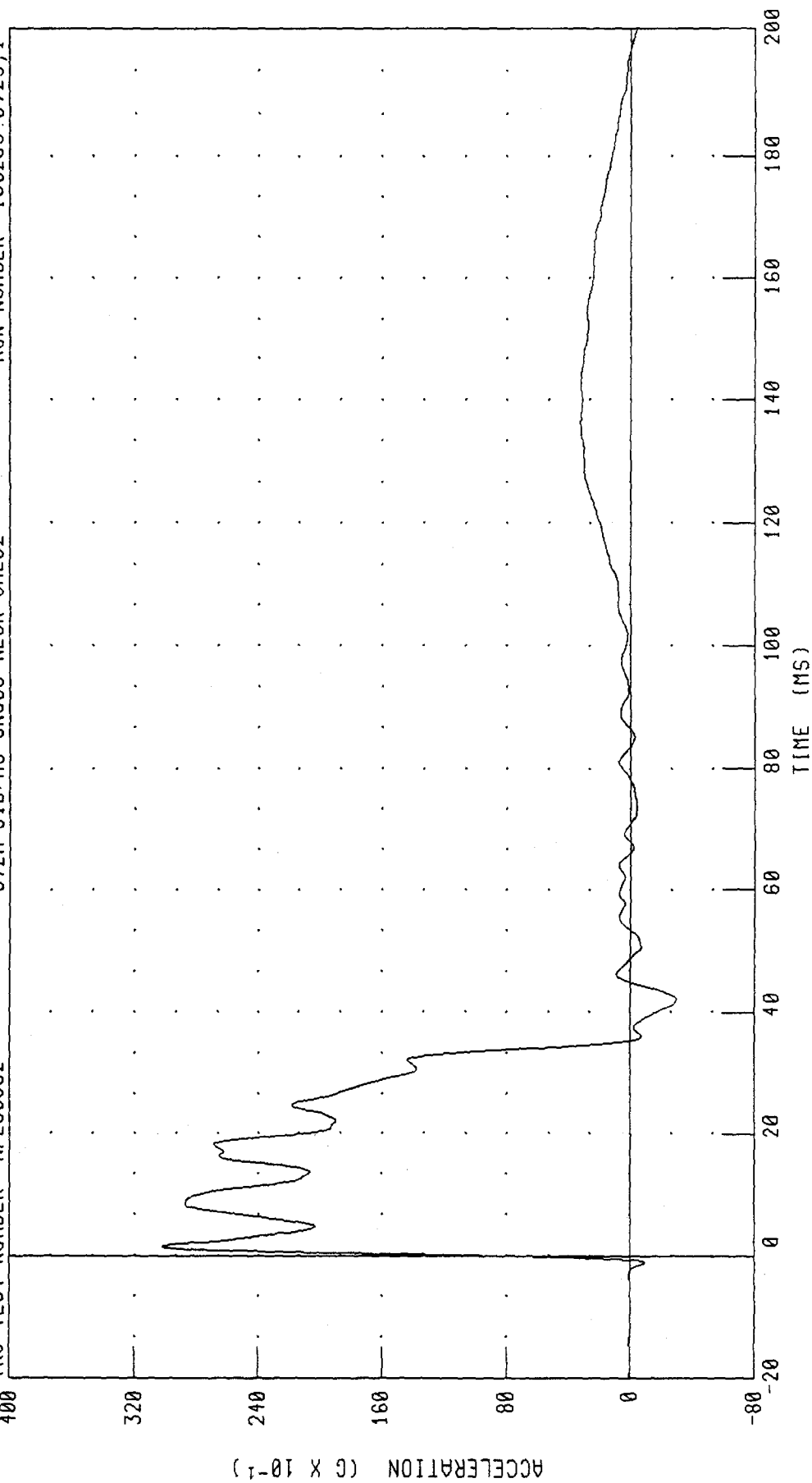
TEST MEETS SPECIFICATIONS

TECHNICIAN 

RUN NUMBER: 100203.0721;1

572M H3/SID DUMMY CALIBRATION -- LEFT LATERAL NECK TEST
PENDULUM DECELERATION

TRC TEST NUMBER: NFL90602 572M SID/H3 SN906 NECK CAL02 RUN NUMBER: 100203.0723,1



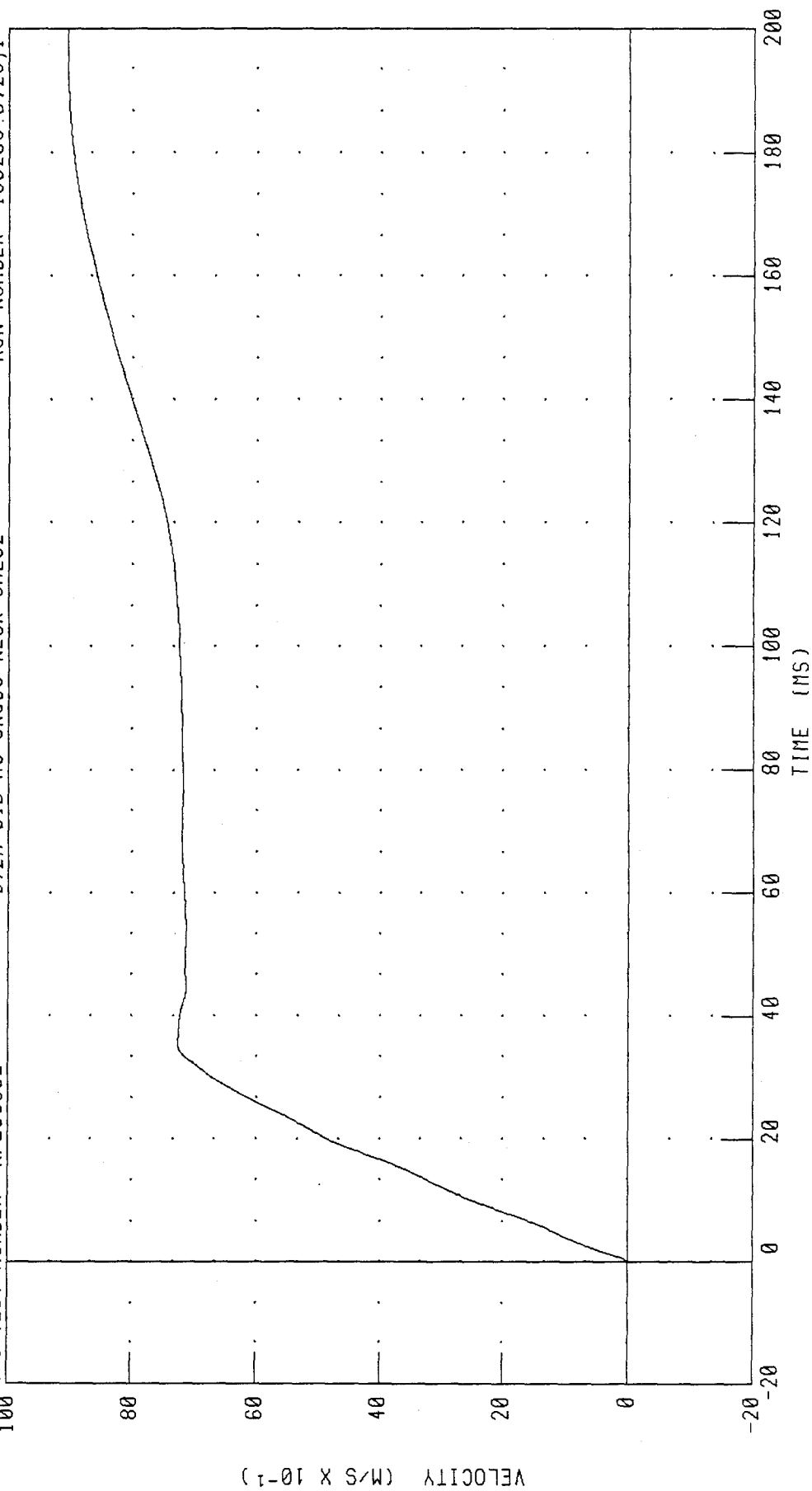
PEAK DATA: 30.26 G @ 1.52 MS; -2.98 G @ 42.08 MS

CHANNEL: PENXC FILTER: CH. CLASS 180

572M H3/SID DUMMY CALIBRATION -- LEFT LATERAL NECK TEST

INTEGRATED PENDULUM VELOCITY

TRC TEST NUMBER: NFL90602 572M SID/H3 SN906 NECK CAL02 RUN NUMBER: 100203.0723,1



PEAK DATA: 9.06 M/S @ 196.56 MS; -0.01 M/S @ -0.64 MS

CHANNEL: PENXVI FILTER: CH. CLASS 180

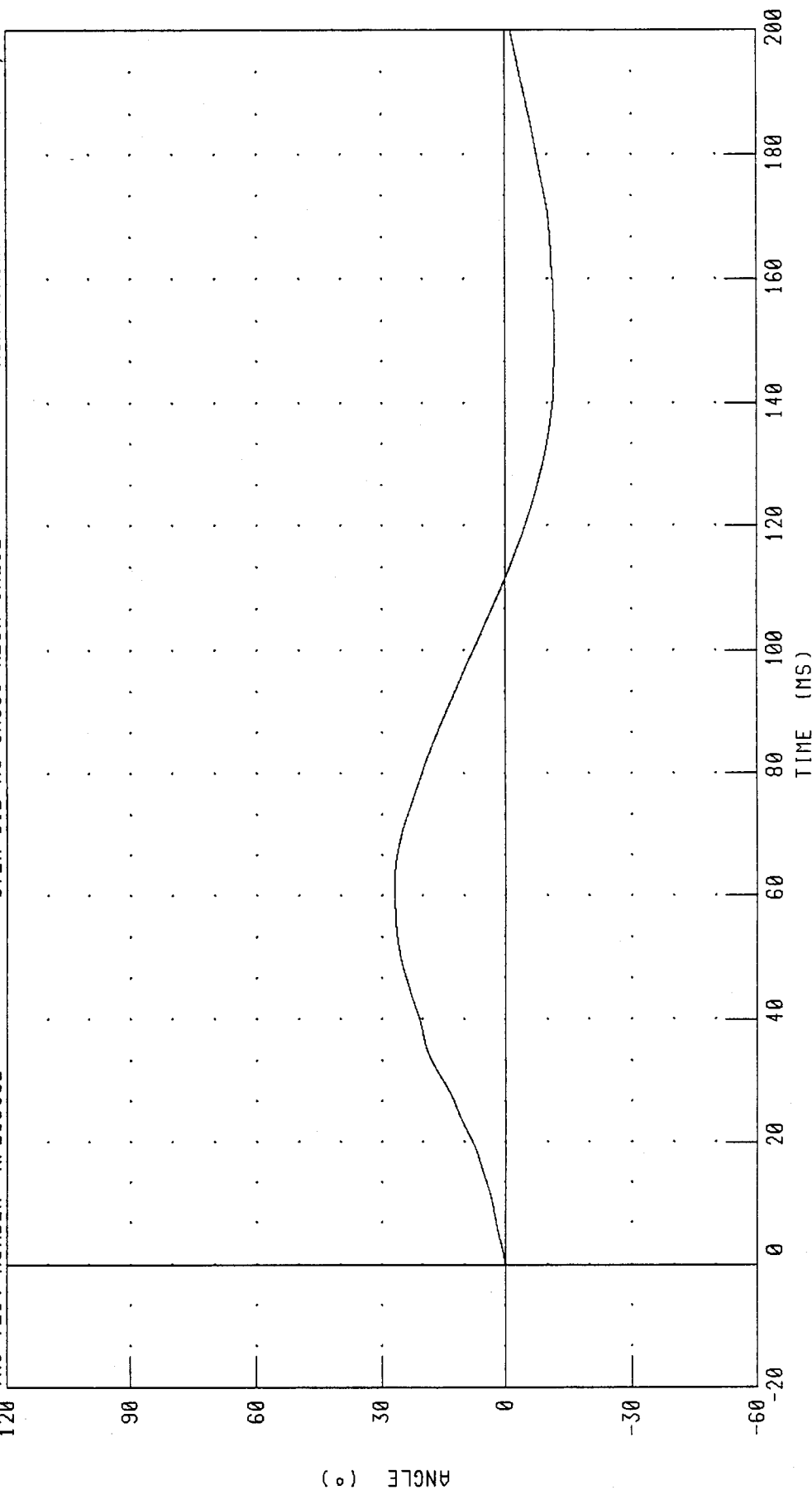
572M H3/SID DUMMY CALIBRATION -- LEFT LATERAL NECK TEST

ROTATION ABOUT BASE OF NECK

TRC TEST NUMBER: NFL90602

572M SID/H3 SN906 NECK CAL02

RUN NUMBER: 100203.0723,1

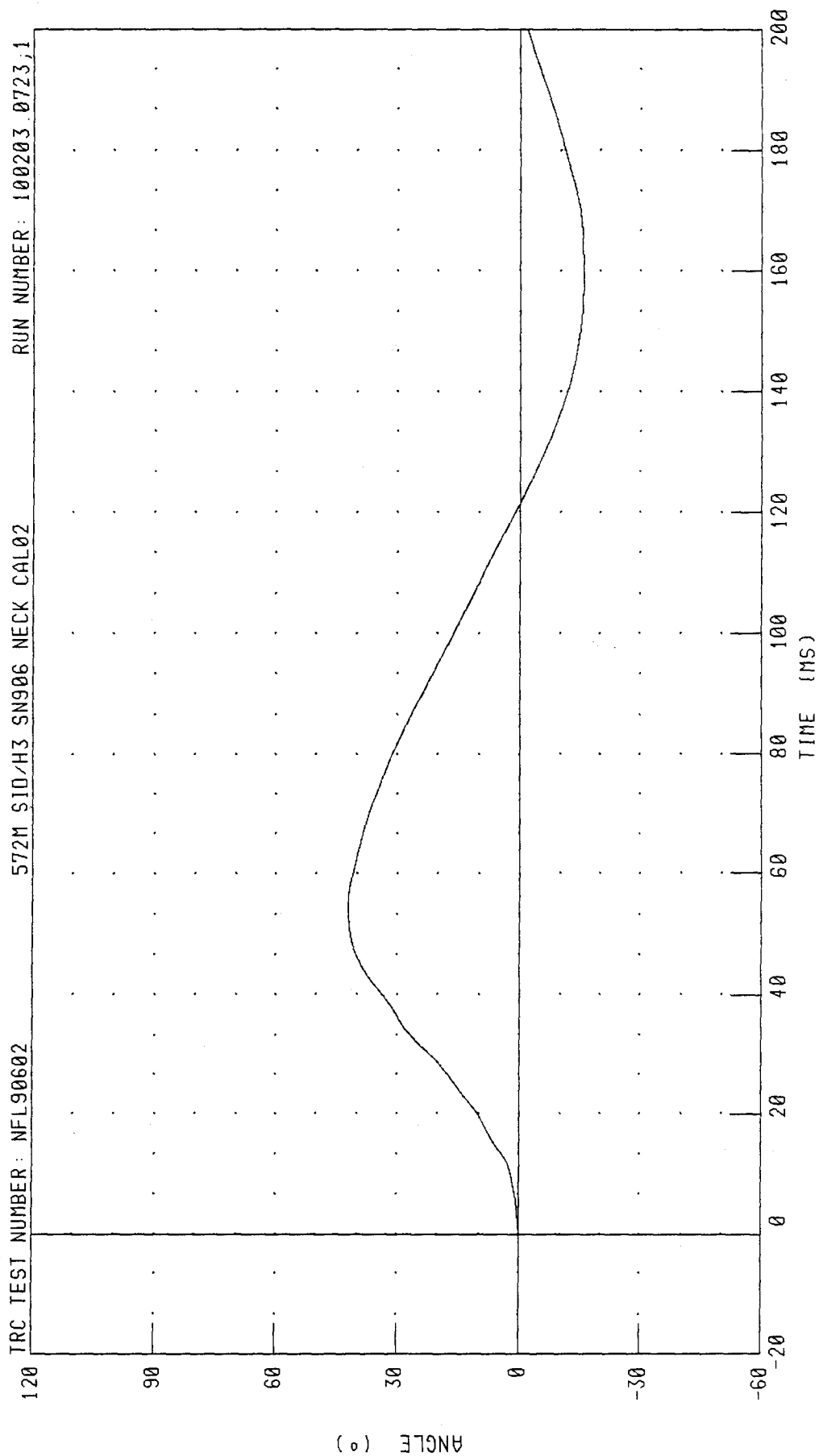


PEAK DATA: 26.87 ° @ 61.92 MS, -11.81 ° @ 150.40 MS

CHANNEL: BETA FILTER: CH. CLASS 60

ANGLE (°)

572M H3/SID DUMMY CALIBRATION -- LEFT LATERAL NECK TEST
 ROTATION ABOUT OCCIPITAL CONDYLE



CHANNEL: THETA FILTER: CH. CLASS 60

PEAK DATA: 42.14 ° @ 54.80 MS; -15.74 ° @ 158.80 MS

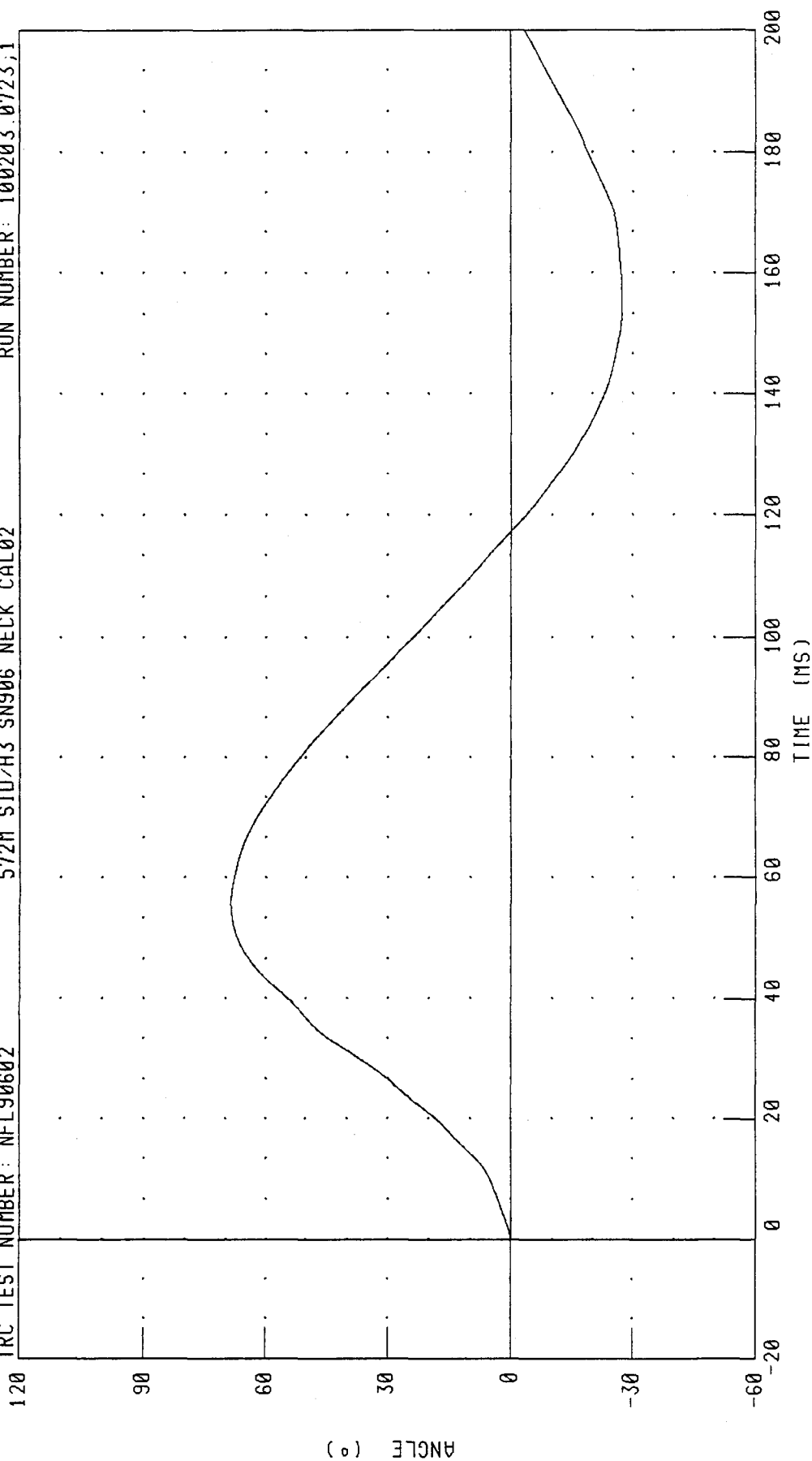
572M H3/SID DUMMY CALIBRATION -- LEFT LATERAL NECK TEST

TOTAL ROTATION

TRC TEST NUMBER: NFL90602

572M SID/H3 SN906 NECK CAL02

RUN NUMBER: 100203.0723,1



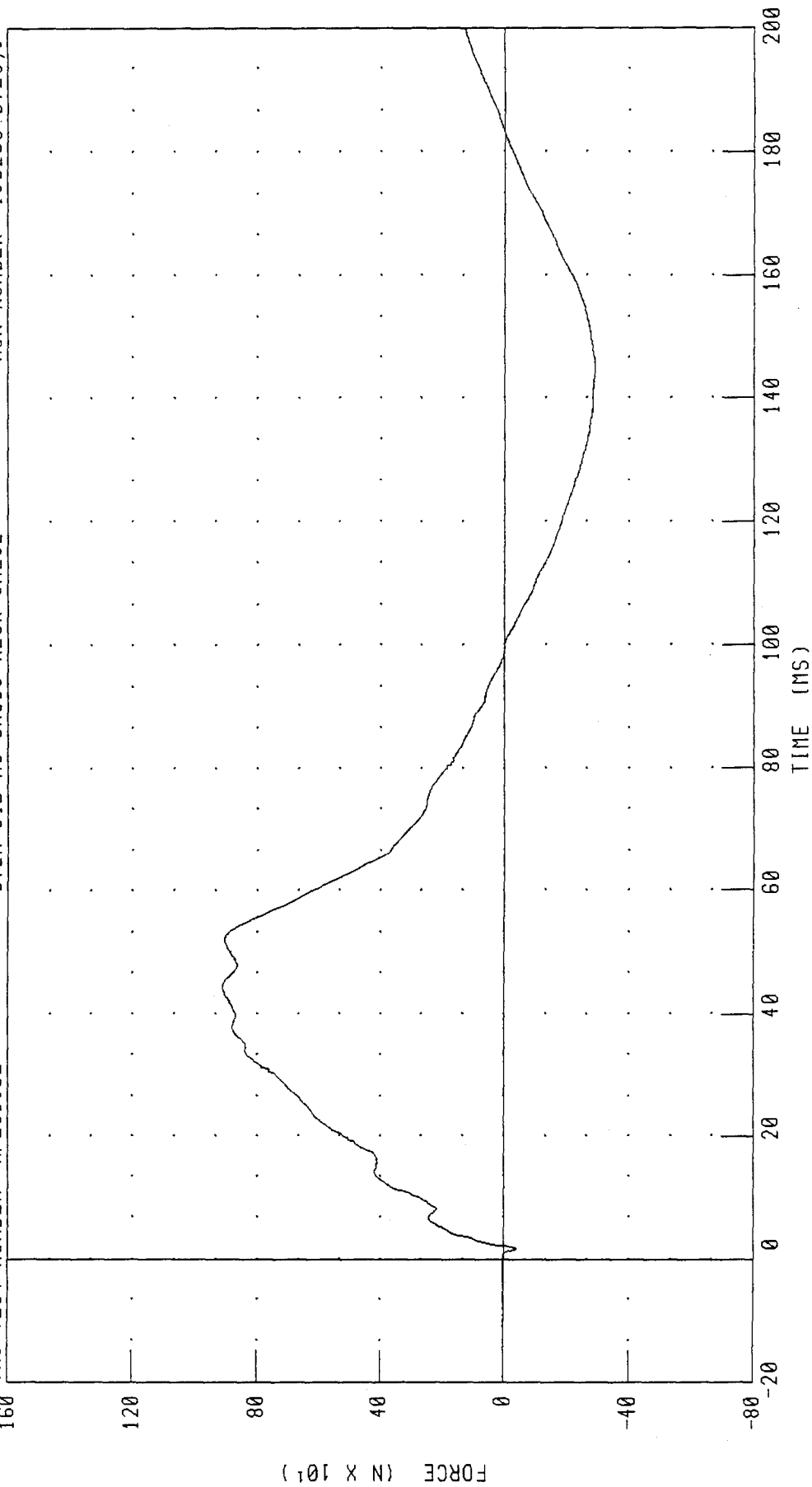
CHANNEL: TOTAL FILTER: CH. CLASS 60

PEAK DATA: 68.66 ° @ 56.16 MS; -27.31 ° @ 156.48 MS

572M H3/SID DUMMY CALIBRATION -- LEFT LATERAL NECK TEST

NECK FORCE Y AXIS

TRC TEST NUMBER: NFL90602 572M SID/H3 SN906 NECK CAL02 RUN NUMBER: 100203 0723.1



PEAK DATA: 909.75 N @ 44.40 MS; -294.02 N @ 145.36 MS

CHANNEL: NEKYF FILTER: CH. CLASS 1000

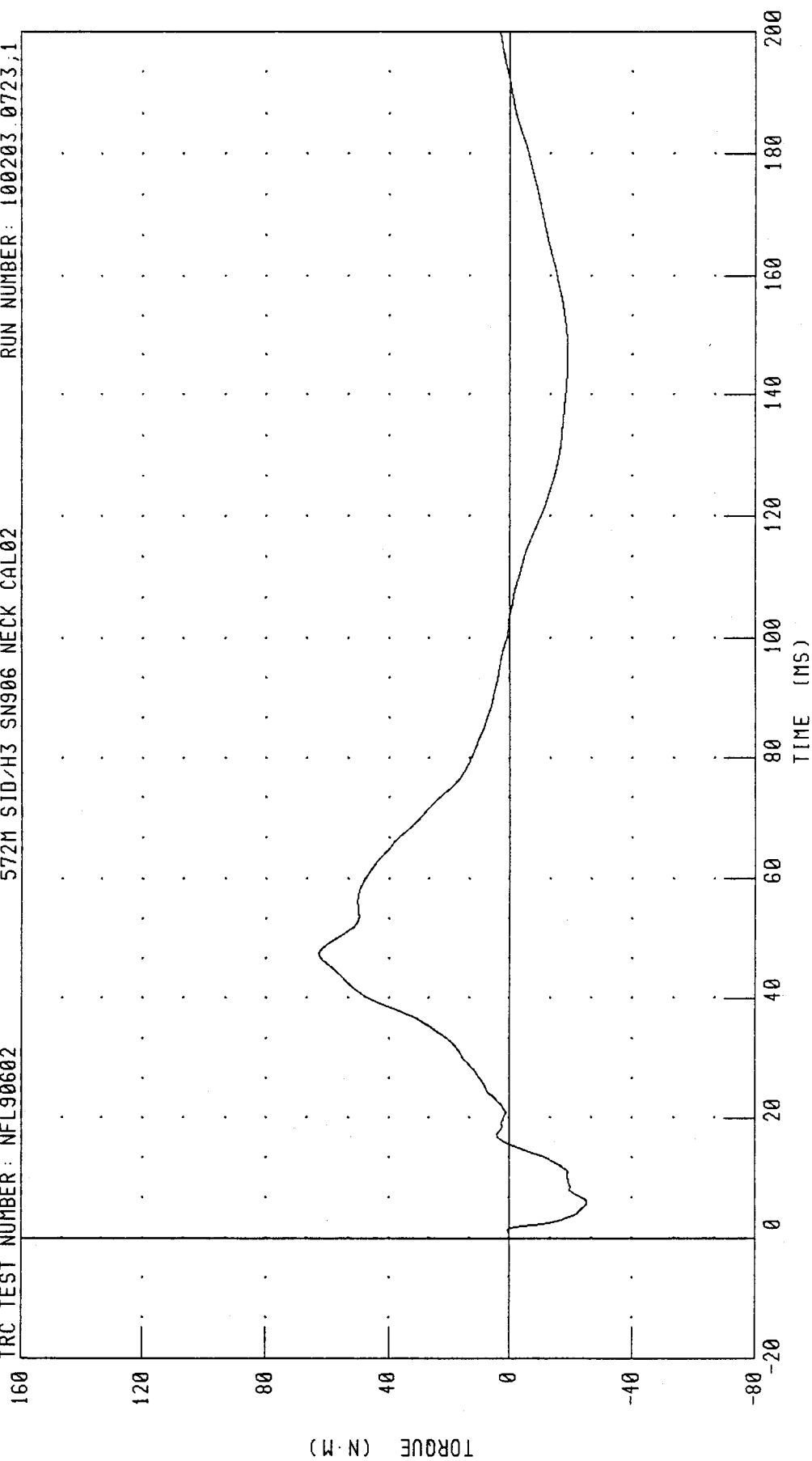
572M H3/SID DUMMY CALIBRATION -- LEFT LATERAL NECK TEST

NECK MOMENT X AXIS

TRC TEST NUMBER: NFL90602

572M SID/H3 SN906 NECK CAL02

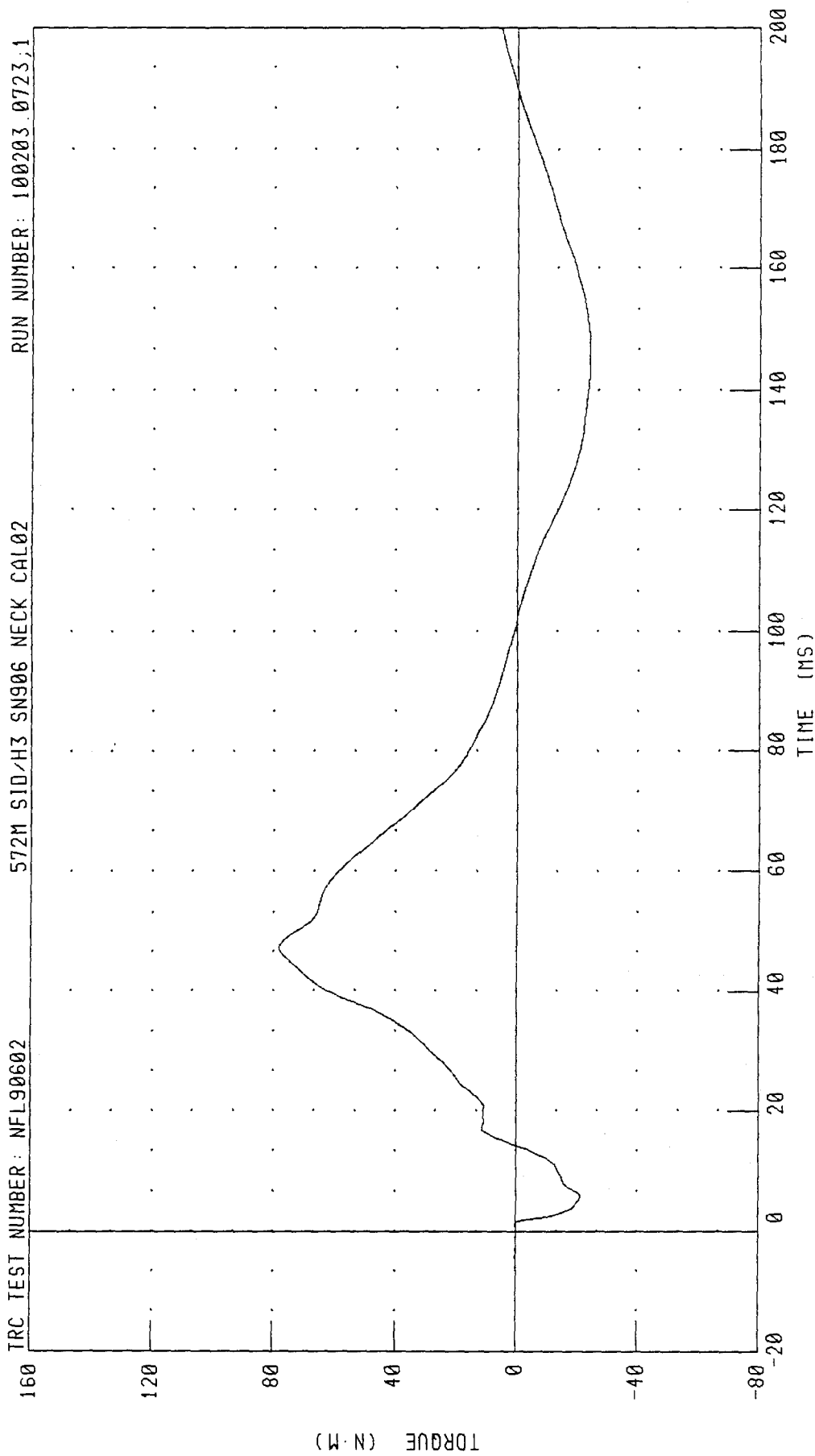
RUN NUMBER: 100203 0723,1



CHANNEL: NEKXM FILTER: CH. CLASS 600

PEAK DATA: 62.80 N-M @ 47.44 MS, -25.21 N-M @ 5.92 MS

572M H3/SID DUMMY CALIBRATION -- LEFT LATERAL NECK TEST
 TOTAL MOMENT ABOUT OCCIPITAL CONDYLE



PEAK DATA: 78.20 N M @ 47.36 MS, -23.87 N M @ 145.04 MS

CHANNEL: NEKOM FILTER: CH. CLASS 600

TRANSPORTATION RESEARCH CENTER INC.

THORACIC SHOCK ABSORBER TESTS

SIDE IMPACT DUMMY

12-SEP-03

TRC INC.

572F SN906 DAMPER TEST CAL02

TEST NUMBER: DP90602A, DP90602B, DP90602C

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		18.9 - 25.5 C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	63.0 %
VELOCITY	FORCE	667 - 925 N	806 N
2.75 M/S	DISPLACEMENT	29.7 - 34.5 MM	29.9 MM
VELOCITY	FORCE	1706 - 2072 N	1929 N
4.24 M/S	DISPLACEMENT	31.6 - 37.2 MM	34.1 MM
VELOCITY	FORCE	3824 - 4542 N	4480 N
6.17 M/S	DISPLACEMENT	33.3 - 39.6 MM	36.3 MM

DAMPER SETTING = 6.0

TEST MEETS SPECIFICATIONS

TECHNICIAN V. F. Walter

RUN NUMBER: 100203.0724;1

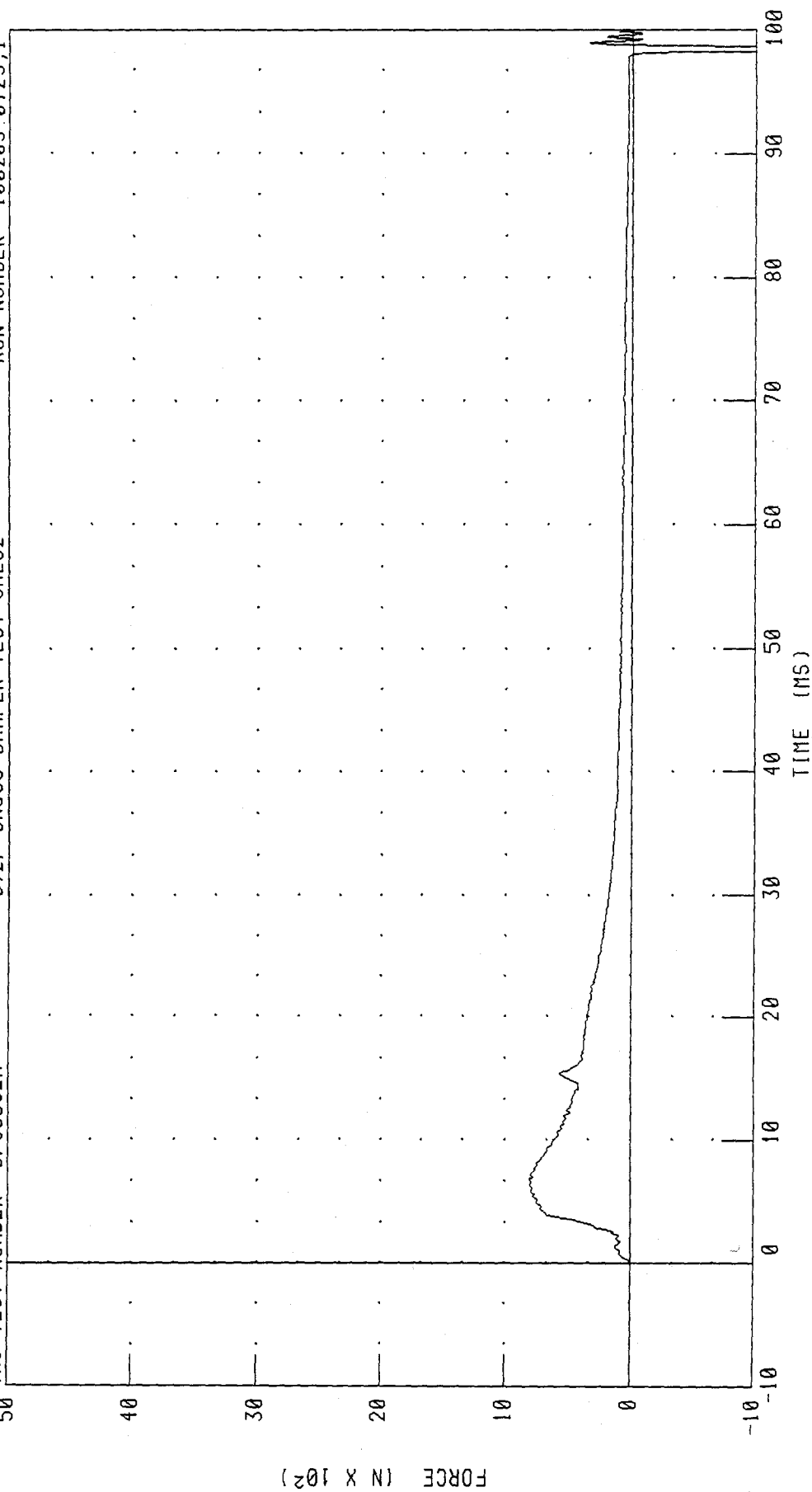
PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (3.0 M/SEC.)

SHOCK ABSORBER RESISTIVE FORCE

IRC TEST NUMBER: DP90602A

572F SN906 DAMPER TEST CAL02

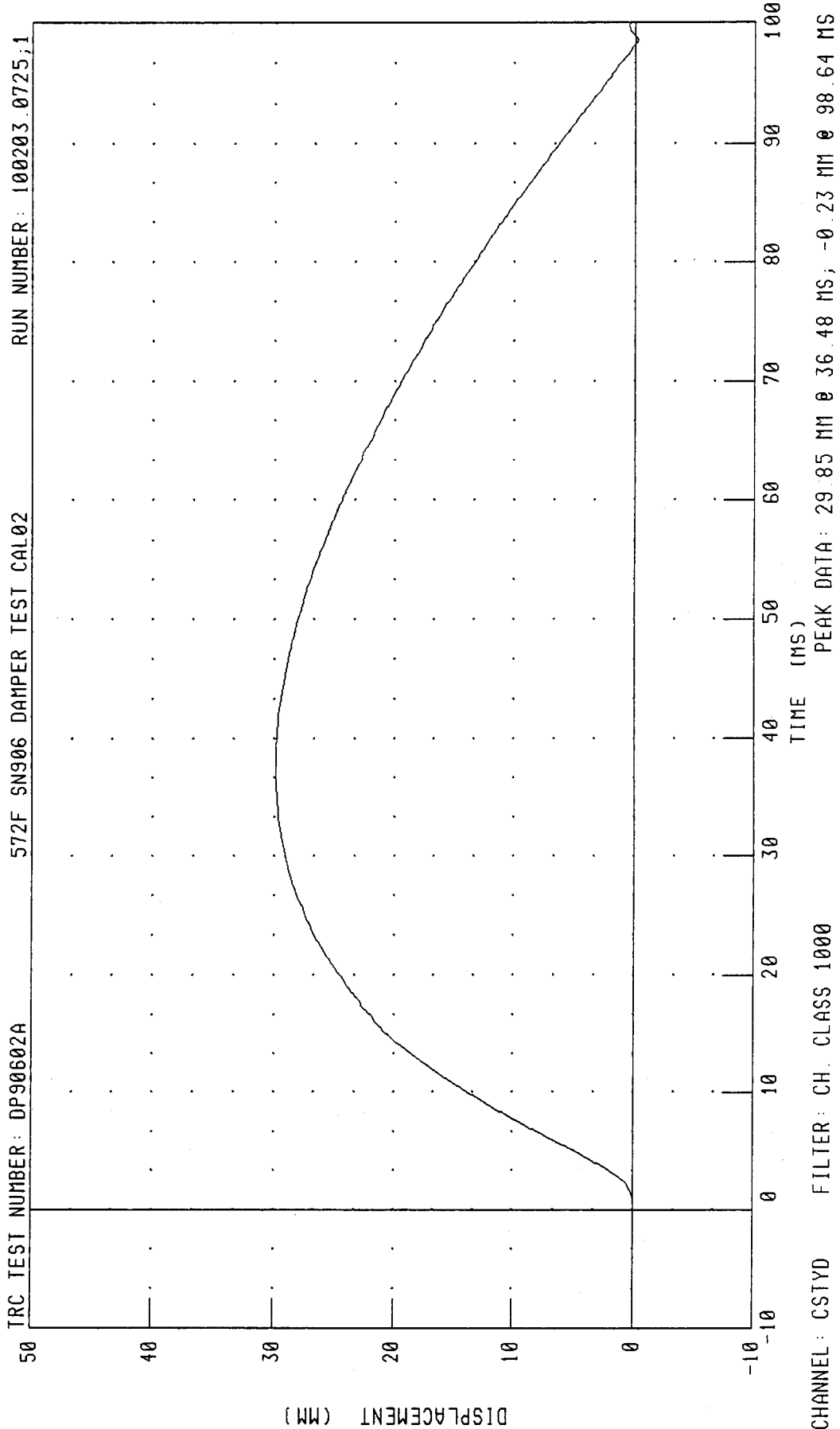
RUN NUMBER: 100203 0725,1



PEAK DATA: 805.75 N @ 6.80 MS, -2274.95 N @ 98.40 MS

CHANNEL: DAMPF FILTER: CH. CLASS 1000

PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (3.0 M/SEC)
SHOCK ABSORBER DISPLACEMENT



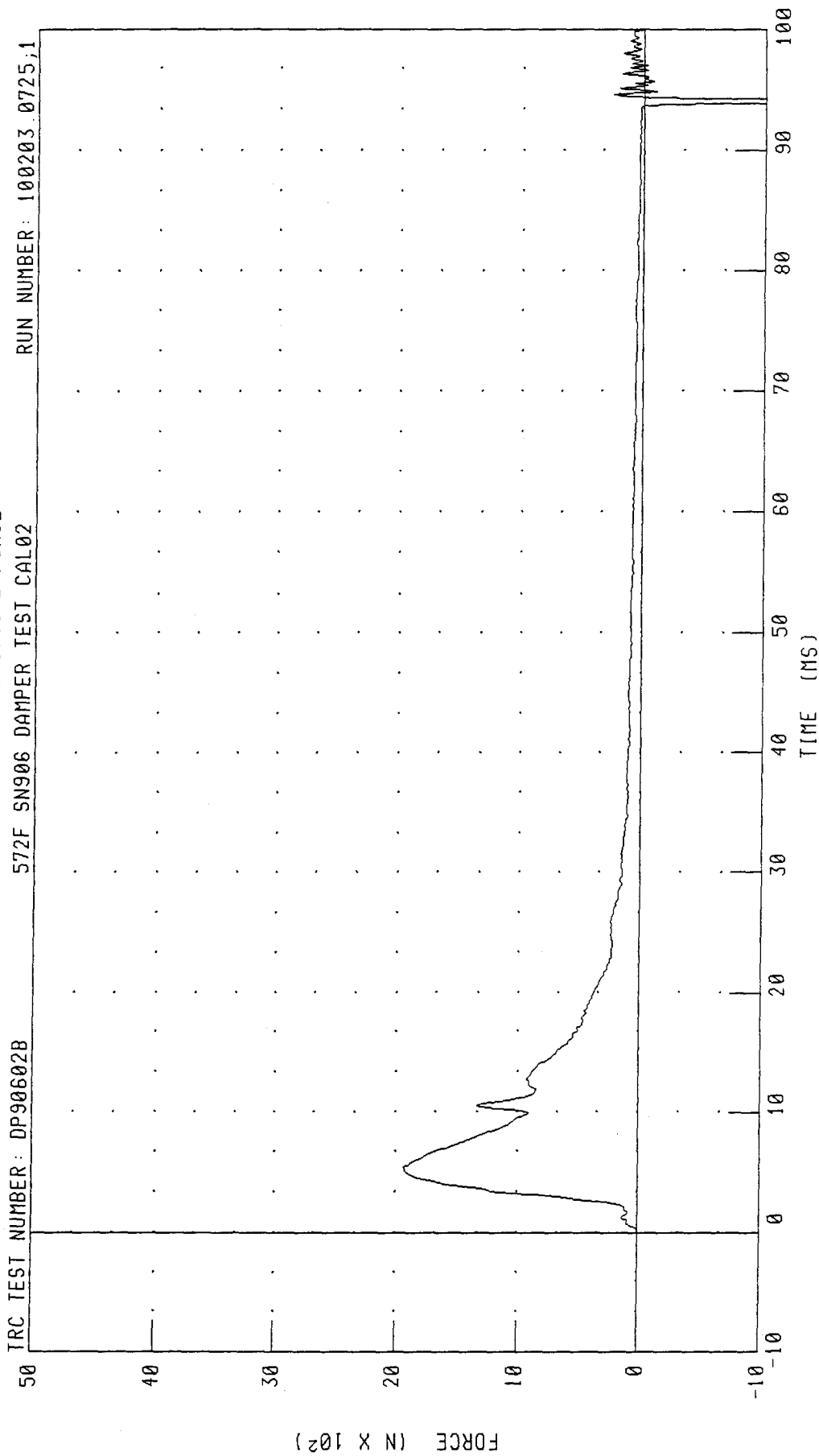
PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (4.3 M/SEC)

SHOCK ABSORBER RESISTIVE FORCE

IRC TEST NUMBER: DP90602B

572F SN906 DAMPER TEST CAL02

RUN NUMBER: 100203 0725,1



TIME (MS)

CHANNEL: DAMPF FILTER: CH. CLASS 1000

PEAK DATA: 1928.88 N @ 5.28 MS, -2597.41 N @ 94.00 MS

PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (4.3 M/SEC)

SHOCK ABSORBER DISPLACEMENT

TRC TEST NUMBER: DP90602B

572F SN906 DAMPER TEST CAL02

RUN NUMBER: 100203.0725,1

50

40

30

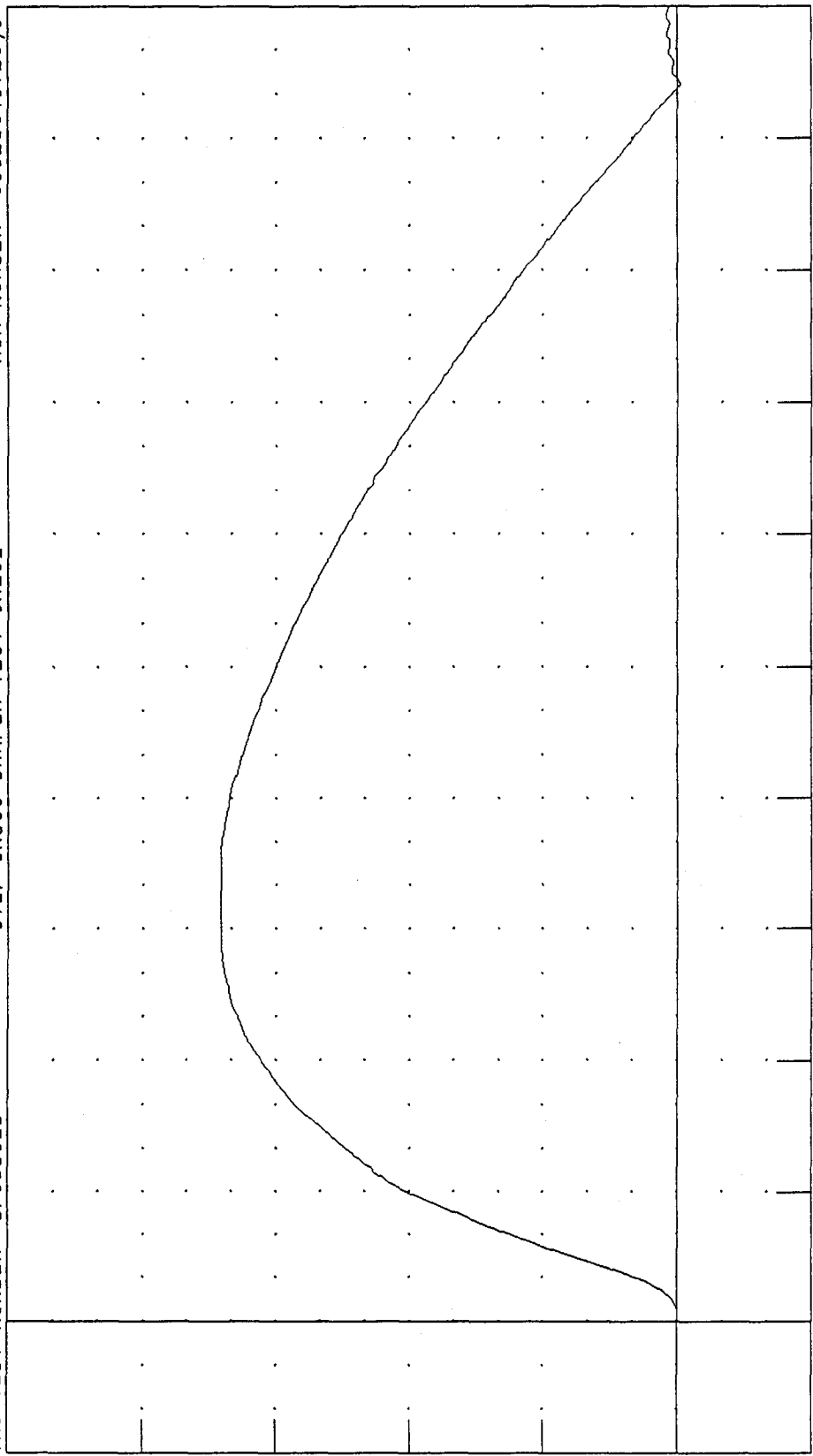
20

10

0

-10

DISPLACEMENT (MM)



TIME (MS)

100

90

80

70

60

50

40

30

20

10

0

PEAK DATA: 34.14 MM @ 31.60 MS; -0.25 MM @ 94.16 MS

CHANNEL: CSTYD FILTER: CH. CLASS 1000

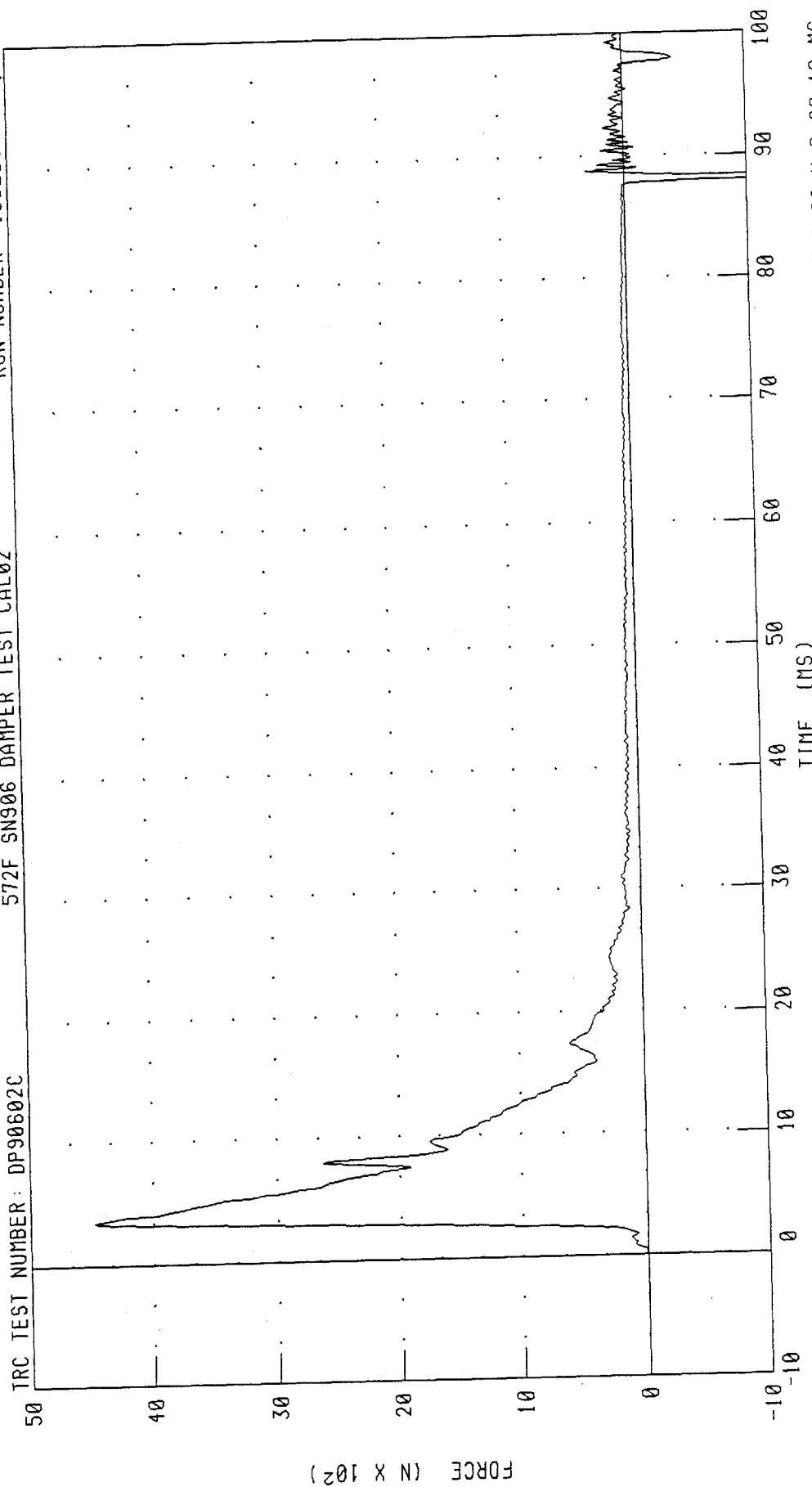
PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (6.1 M/SEC)

SHOCK ABSORBER RESISTIVE FORCE

572F SN906 DAMPER TEST CAL02

RUN NUMBER: 100203 0725,1

TRC TEST NUMBER: DP90602C

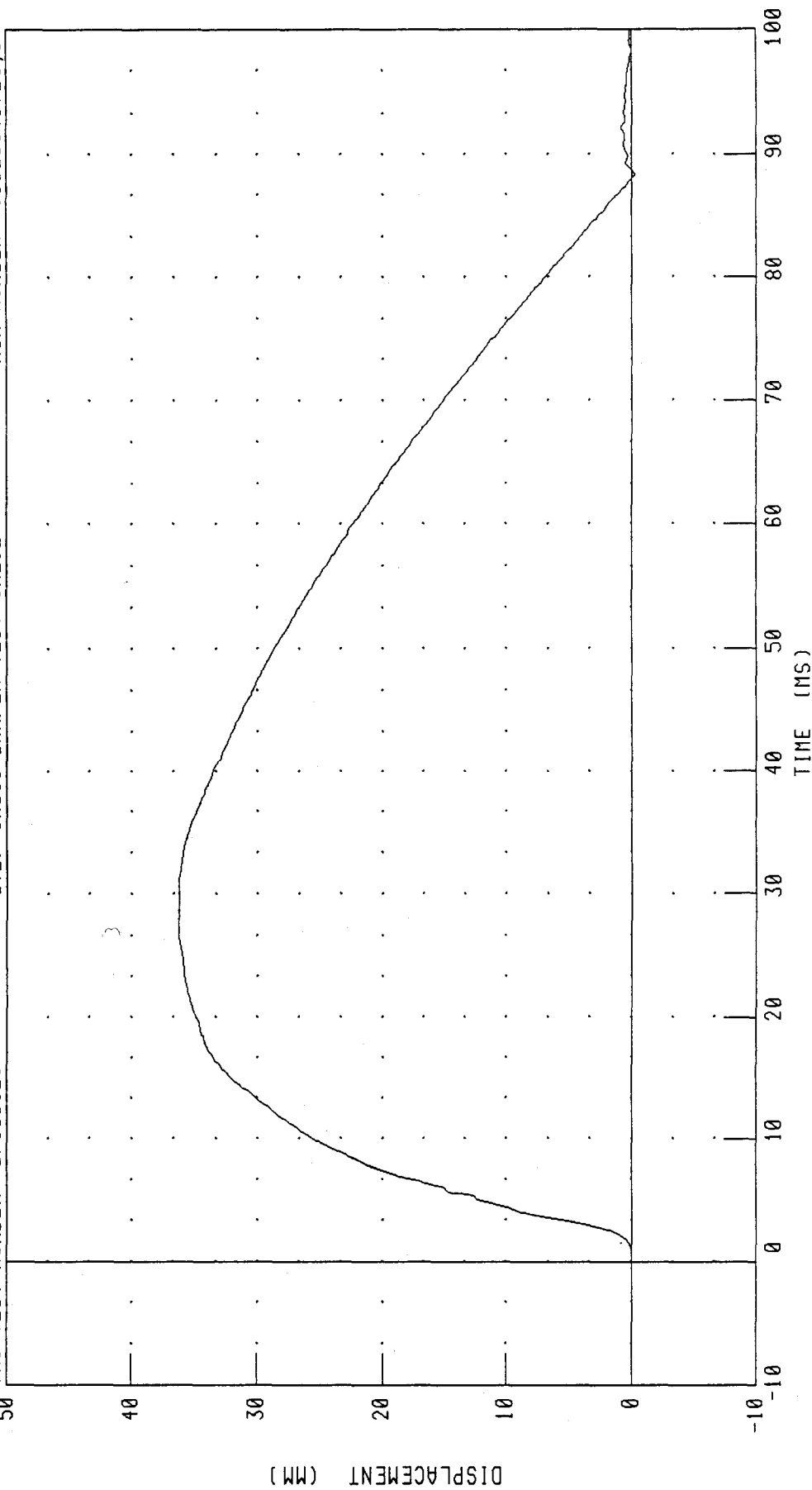


PEAK DATA: 4479.55 N @ 3.44 MS, -2512.86 N @ 88.16 MS

CHANNEL: DAMPF FILTER: CH CLASS 1000

PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (6.1 M/SEC)
SHOCK ABSORBER DISPLACEMENT

TRC TEST NUMBER: DP90602C 572F SN906 DAMPER TEST CAL02 RUN NUMBER: 100203 0725,1



CHANNEL: CSTYD FILTER: CH. CLASS 1000

PEAK DATA: 36.26 MM @ 28.00 MS; -0.24 MM @ 88.32 MS

TRANSPORTATION RESEARCH CENTER INC.

LATERAL THORAX IMPACT TEST

SIDE IMPACT DUMMY

15-SEP-03

LEFT SIDE CONFIGURATION

TRC INC.

TEST NO: STL90602

SID/HIII SN906 L.THORAX CAL02

TEST PARAMETER	SPECIFICATION (ABSOLUTE VALUE)	TEST RESULTS
TEMPERATURE	18.9 - 25.5 C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	54.0 %
PENDULUM VELOCITY	4.21 - 4.33 M/S	4.26 M/S
PEAK ACCELERATION: UPPER RIB BAR	37 - 46 G	37.5 G
PEAK ACCELERATION: LOWER RIB BAR	37 - 46 G	37.8 G
PEAK ACCELERATION: LOWER THORACIC SPINE	15 - 22 G	16.1 G

TEST MEETS SPECIFICATIONS

TECHNICIAN

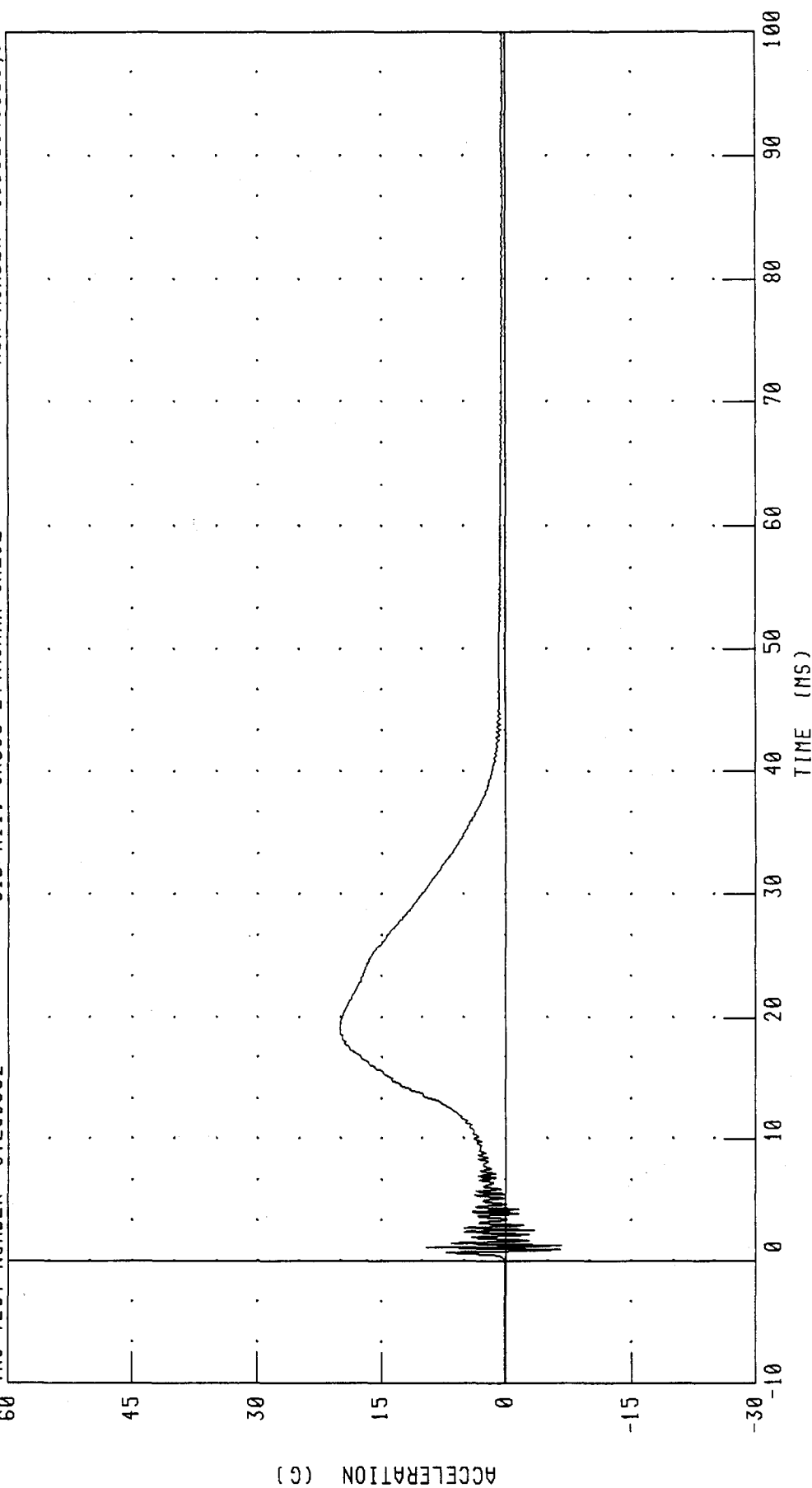
V.J. Watts

RUN NUMBER: 100203.0724;1

PART 572-F S.I.D. THORAX CALIBRATION - (LEFT SIDE IMPACT)

PENDULUM DECELERATION

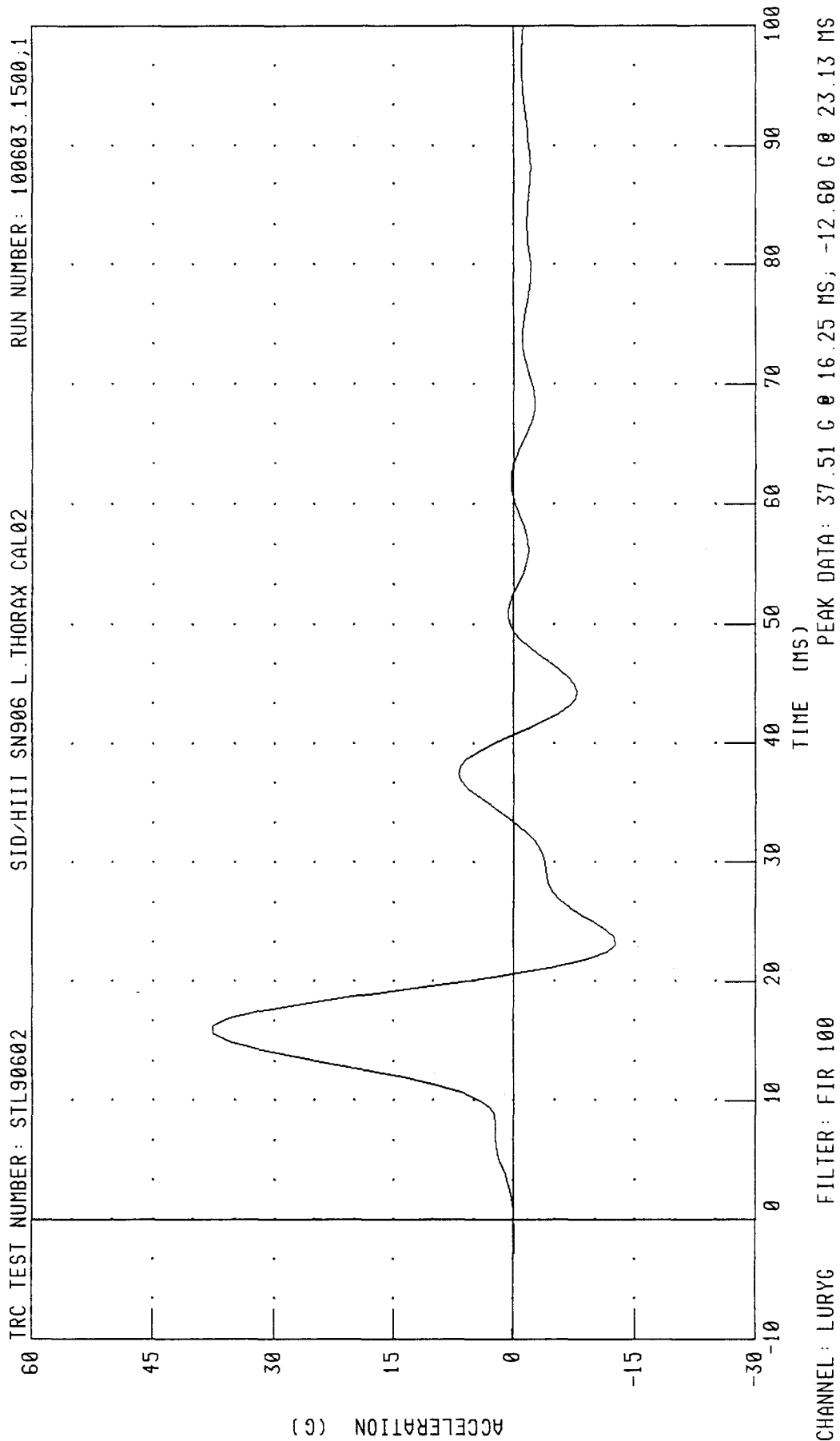
TRC TEST NUMBER: STL90602 SID/HIII SN906 L THORAX CAL02 RUN NUMBER: 100603.1500;1



CHANNEL: PENXC FILTER: CH. CLASS 1000

PEAK DATA: 20.06 G @ 19.20 MS; -6.68 G @ 1.28 MS

PART 572-F S.I.D. THORAX CALIBRATION - (LEFT SIDE IMPACT)
 LEFT UPPER RIB ACCELERATION Y AXIS



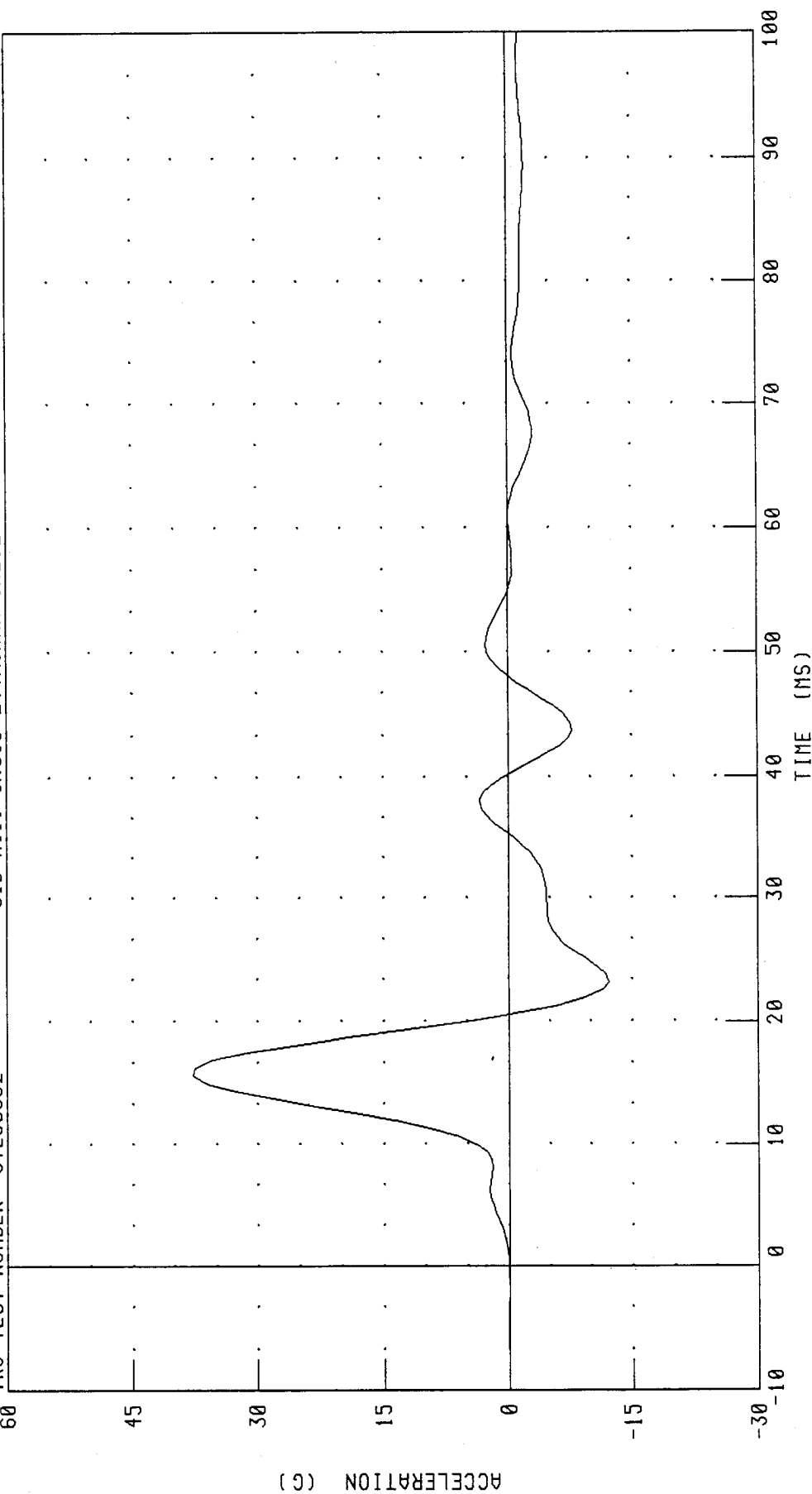
PART 572-F S.I.D. THORAX CALIBRATION - (LEFT SIDE IMPACT)

LEFT LOWER RIB ACCELERATION Y AXIS

TRC TEST NUMBER: STL90602

SID/HIII SN906 L THORAX CAL02

RUN NUMBER: 100603.1500,1



CHANNEL: LLRYG FILTER: FIR 100

PEAK DATA: 37.76 G @ 15.63 MS, -12.18 G @ 23.13 MS

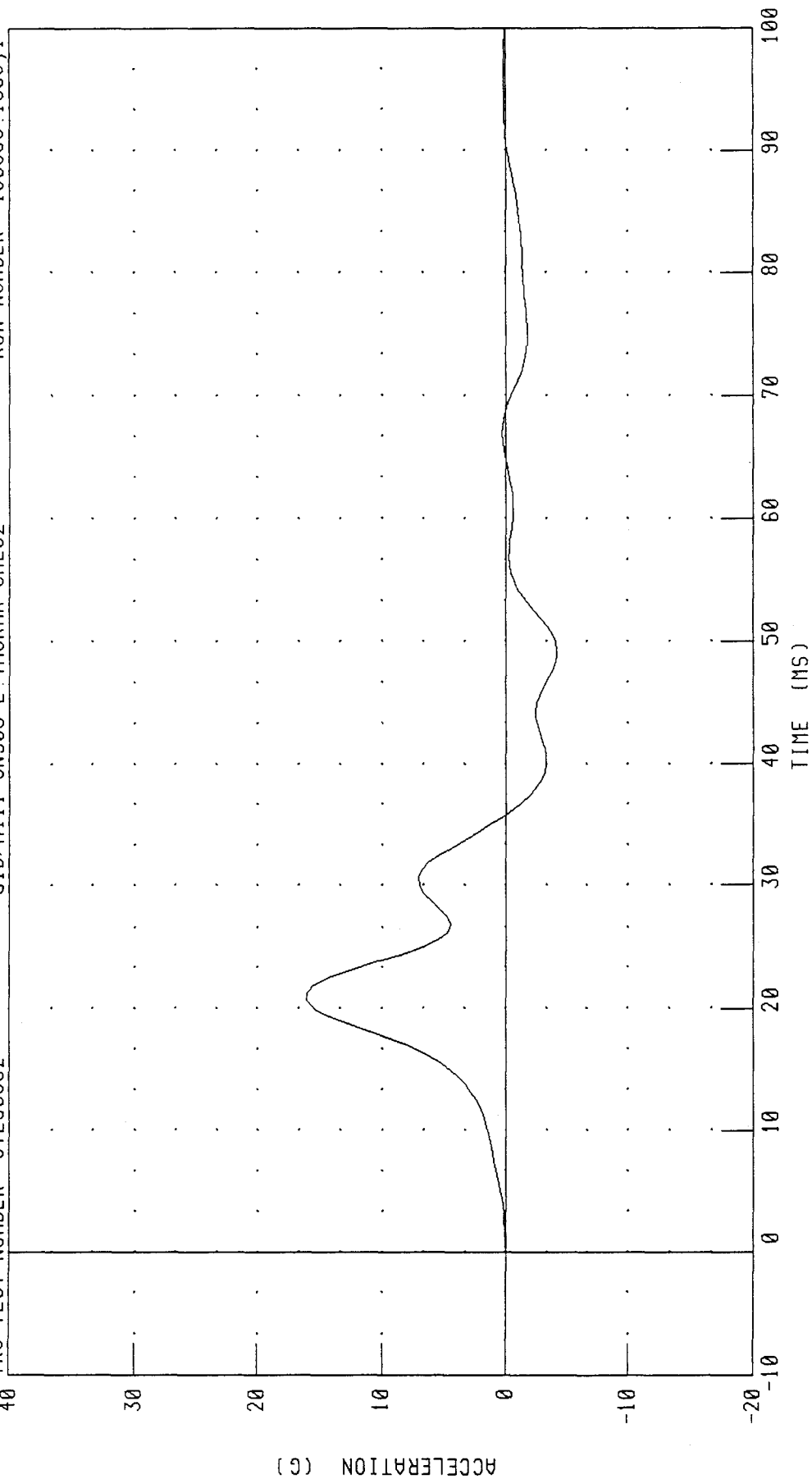
PART 572-F S.I.D. THORAX CALIBRATION - (LEFT SIDE IMPACT)

LOWER SPINE ACCELERATION Y AXIS

IRC TEST NUMBER: STL90602

SID/HIII SN906 L THORAX CAL02

RUN NUMBER: 100603.1500;1



PEAK DATA: 16.10 G @ 21.25 MS; -4.20 G @ 49.37 MS

CHANNEL: T12YC FILTER: FIR 100

TRANSPORTATION RESEARCH CENTER INC.

LATERAL PELVIS IMPACT TEST

SIDE IMPACT DUMMY

15-SEP-03

LEFT SIDE CONFIGURATION

TRC INC.

TEST NO: SPL90602

SID/HIII SN906 L.PELVIS CAL02

TEST PARAMETER	SPECIFICATION (ABSOLUTE VALUE)	TEST RESULTS
TEMPERATURE	18.9 - 25.5 C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	55.0 %
PENDULUM VELOCITY	4.21 - 4.33 M/S	4.28 M/S
PEAK PELVIC ACCELERATION	40 - 60 G	52.6 G
TIME ABOVE 20 G LEVEL	3 - 7 MS	6.0 MS
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

TECHNICIAN

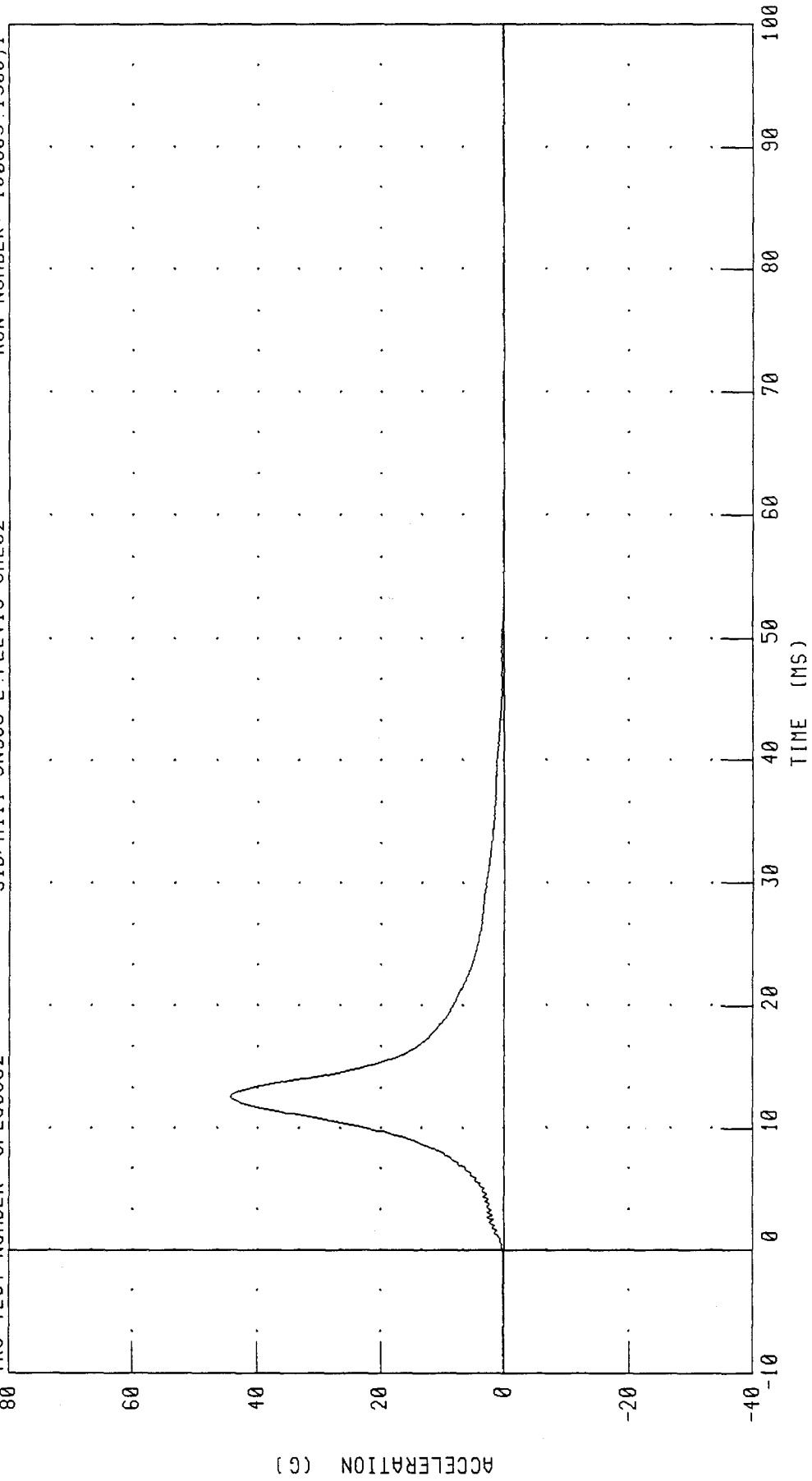
V.I. Walter

RUN NUMBER: 100203.0723;1

PART 572-F S.I.D. PELVIS CALIBRATION - (LEFT SIDE IMPACT)

PENDULUM DECELERATION

TRC TEST NUMBER: SPL90602 SID/HIII SN906 L.PELVIS CAL02 RUN NUMBER: 100603.1500.1



PEAK DATA: 44.53 G @ 12.56 MS; -0.08 G @ 53.92 MS

CHANNEL: PENXC FILTER: CH. CLASS 1000

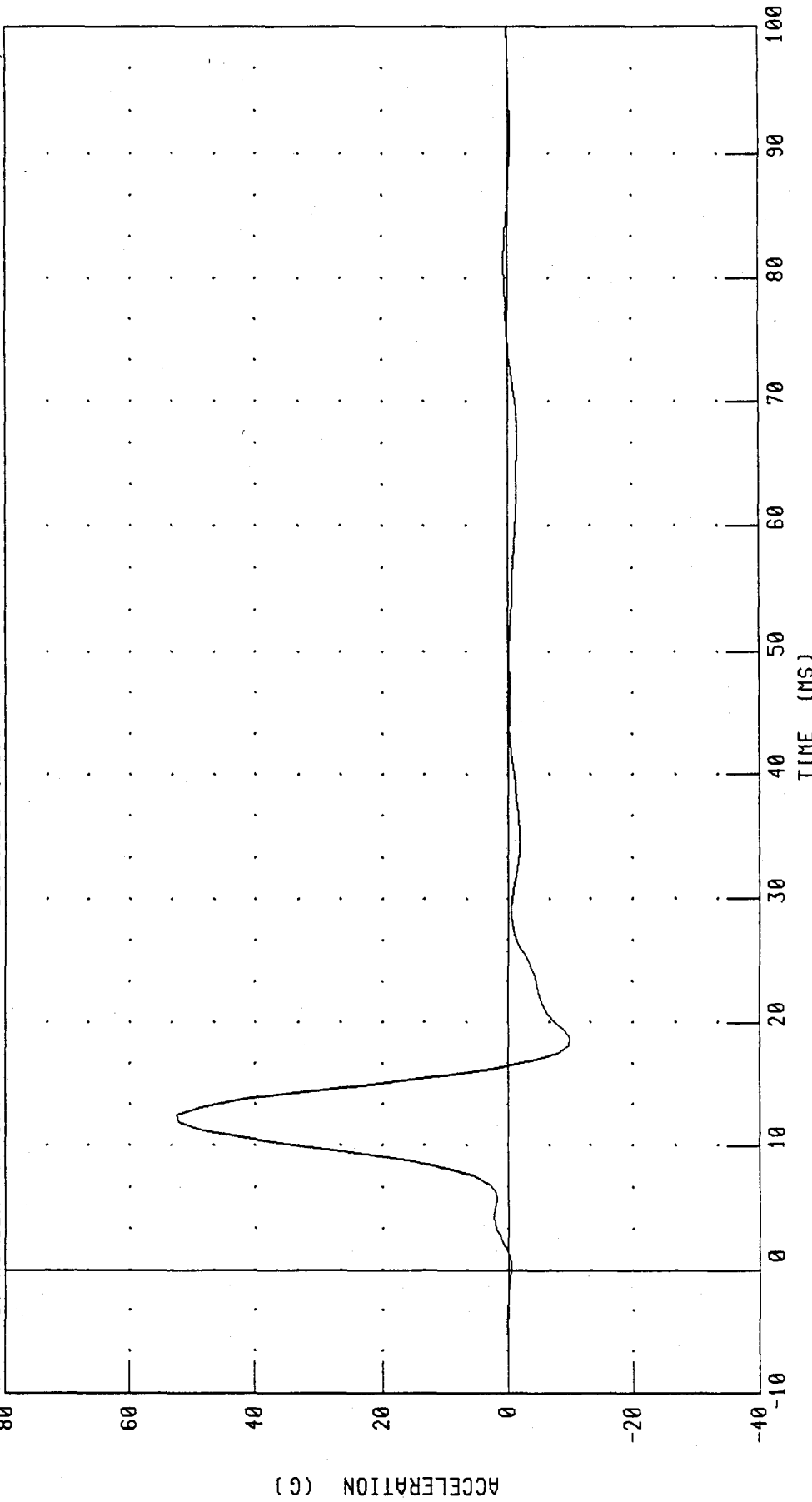
PART 572-F S.I.D. PELVIS CALIBRATION - (LEFT SIDE IMPACT)

PELVIS ACCELERATION Y AXIS

TRC TEST NUMBER: SPL90602

SID/HIII SN906 L.PELVIS CAL02

RUN NUMBER: 100603.1500;1



TIME (MS)

PEAK DATA: 52.58 G @ 12.50 MS; -9.84 G @ 18.75 MS

CHANNEL: PEVYC FILTER: FIR 100

Calibration Test Results

Post-Test

SID HIII: 055

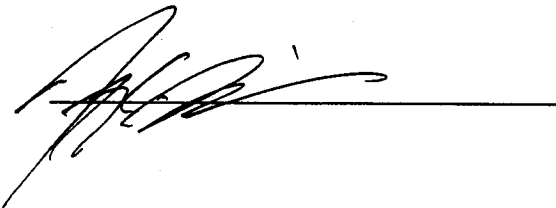
External Dimensions:	The dummy passed all external dimension requirements.
Lateral Head Drop Test:	The head passed all lateral drop test requirements.
Lateral Neck Test:	The neck passed all impact test requirements.
Lateral Thorax Impact Test:	The thorax passed all impact test requirements.
Thoracic Shock Absorber Test:	The thoracic shock absorber was not tested at this time.
Lumbar Flexion Test:	The dummy met the lumbar flexion test requirements.
Abdominal Compression Test:	The abdomen met the compression test requirements.
Pelvis Impact Test:	The lateral pelvis passed all impact test requirements.

Transportation Research Center Inc.
SID/HIII Dummy
External Dimensions
Serial No. 055 Calibration No. 09

Test Parameter	Dimension	Specification	Results	Pass	
Seated Height	SH	889.0 - 909.3 mm	909 mm	Yes	
Rib Height	RH	501.7 - 520.7 mm	511 mm	Yes	
Hip Pivot Height	HP	99.1 REF mm	99.1 mm		
Rib From Backline	RD	228.6 - 241.3 mm	223 mm	No	*
Knee Pivot From Backline	KH	510.5 - 525.8 mm	525 mm	Yes	
Knee Pivot From Floor	KV	490.2 - 505.5 mm	492 mm	Yes	
Hip Width	HW	355.6 - 391.2 mm	366 mm	Yes	
Top Rib Width From C/L	RW-1	165.1 - 180.3 mm	171 mm	Yes	
Bottom Rib Width From C/L	RW-2	165.1 - 180.3 mm	172 mm	Yes	
Difference Between Top & Bottom Rib Width from C/L		<= 2.5 mm	1.0 mm	Yes	

* Test Does Not Meet Specifications

Technician



Approved




Transportation Research Center Inc.

572M Left Left Lateral Head Test

SID HIII Serial No. 055 Calibration No. 09 - 1

Test Date 10/07/2003

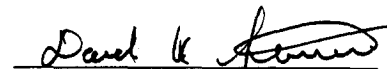
Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	31 %	Yes
Peak Resultant Acceleration	115 - 150 g	132.3 g	Yes
Peak Longitudinal Acceleration	15 g Max	7.8 g	Yes
Is Acceleration Curve Unimodal?	Yes	Yes	Yes

Comments:

Technician



Approved



10.07.2003 07:05:10 609

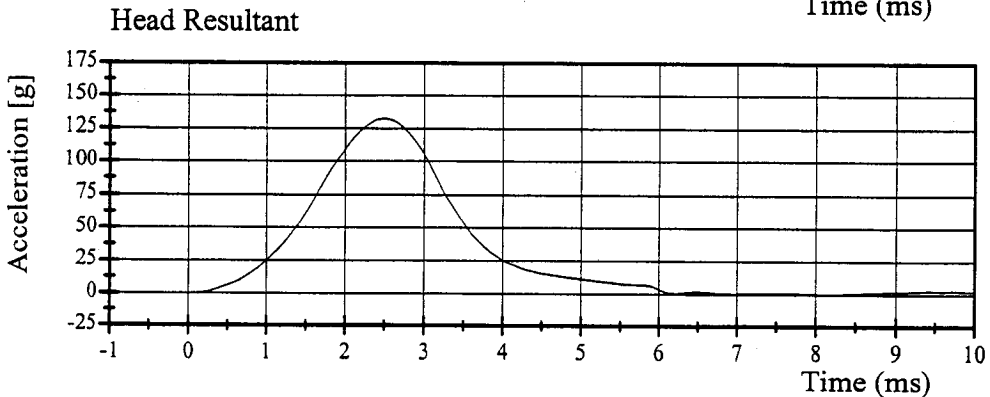
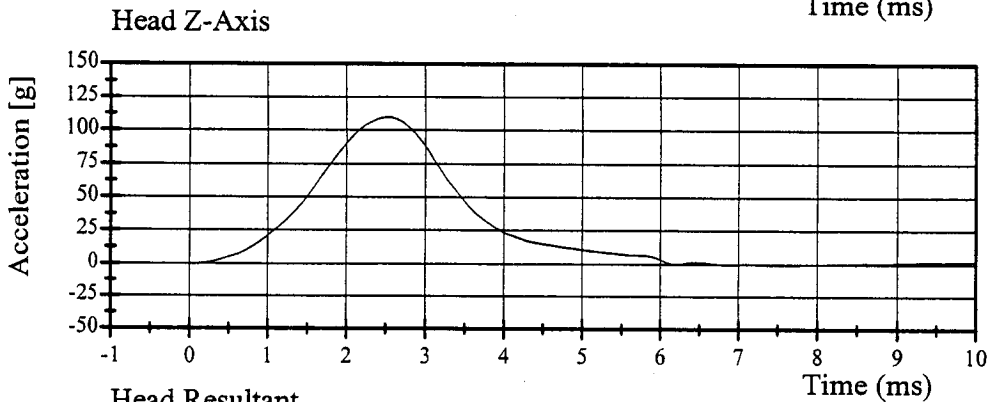
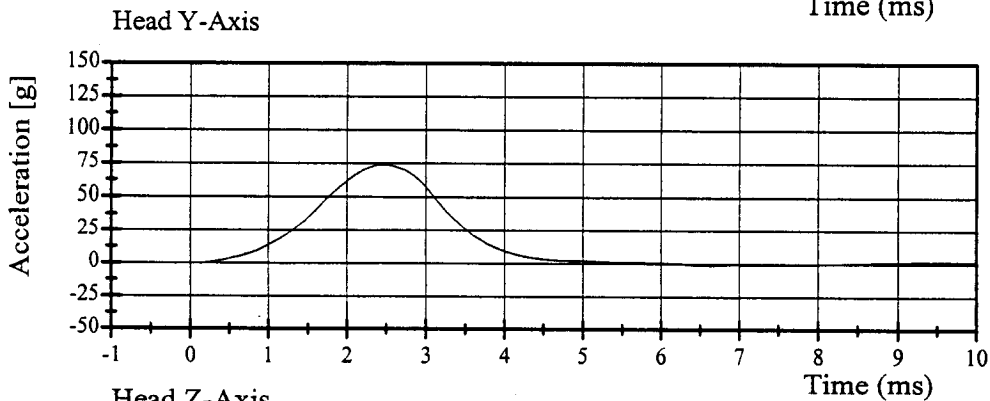
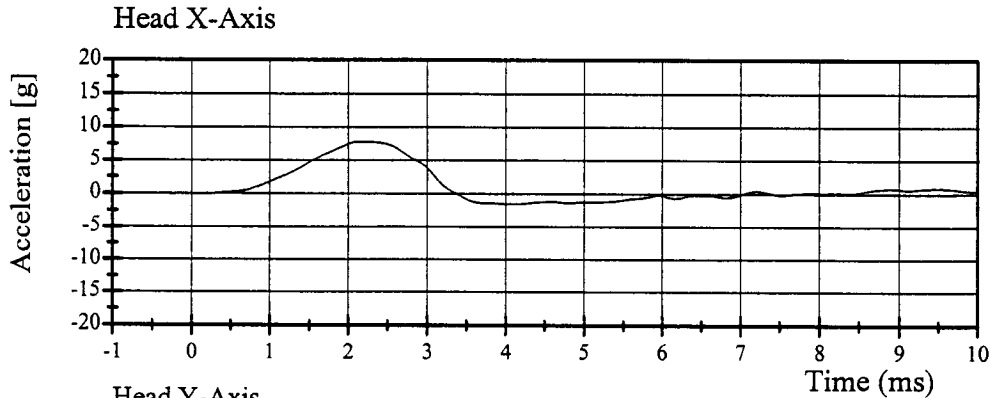


Transportation Research Center Inc.

572M Left Left Lateral Head Test

SID HIII Serial No. 055 Calibration No. 09 - 1

Test Date 10/07/2003



10.07.2003 07:05:11 609



Transportation Research Center Inc.

572M Left Lateral Neck Test

SID HIII Serial No. 055 Calibration No. 09 - 1

Test Date 10/07/2003

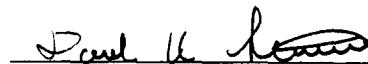
Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	30 %	Yes
Impact Velocity	6.89 - 7.13 m/s	7.06 m/s	Yes
Integrated Pendulum Velocity			
10 ms	1.96 - 2.55 m/s	2.32 m/s	Yes
20 ms	4.12 - 5.10 m/s	4.66 m/s	Yes
30 ms	5.73 - 7.64 m/s	6.65 m/s	Yes
40 - 70 ms	6.27 - 7.64 m/s	7.19 - 7.33 m/s	Yes
Peak D Plane Rotation	66 - 82 °	70.6 °	Yes
Rotation Decay Time To 0° From Peak Angle	58 - 67 °	59.8 °	Yes
Peak Moment About Occipital Condyles	73.0 - 88.0 N·m	83.43 N·m	Yes
Moment Decay Time To 0 N·m From Peak Moment	49 - 64 ms	54.56 ms	Yes
Time Between Peak Rotation and Peak Moment	2 - 16 ms	11.04 ms	Yes

Comments:

Technician



Approved



10.07.2003 07:28:54 500



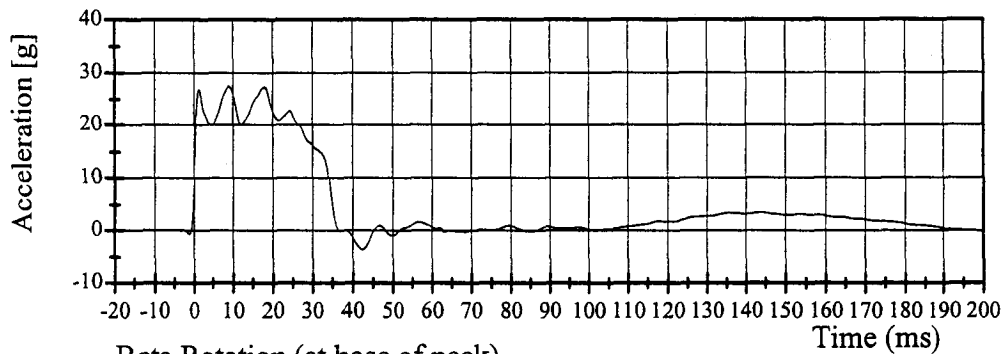
Transportation Research Center Inc.

572M Left Lateral Neck Test

SID HIII Serial No. 055 Calibration No. 09 - 1

Test Date 10/07/2003

Pendulum Deceleration

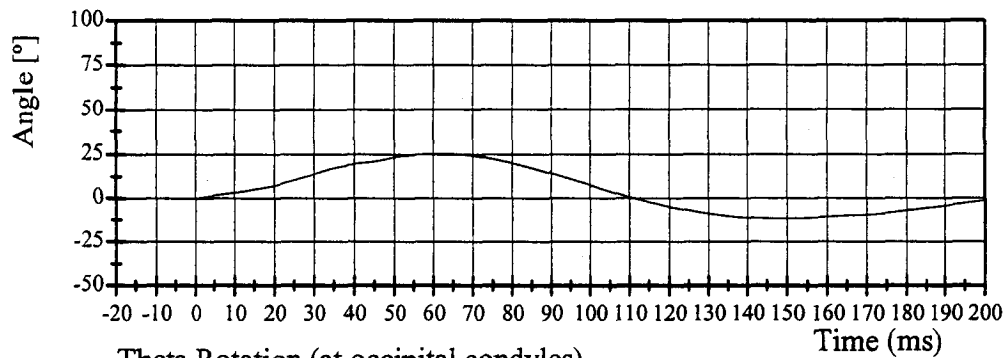


Filter Class: 180

Max: 27.5 g at 9.0 ms

Min: -3.6 g at 42.5 ms

Beta Rotation (at base of neck)

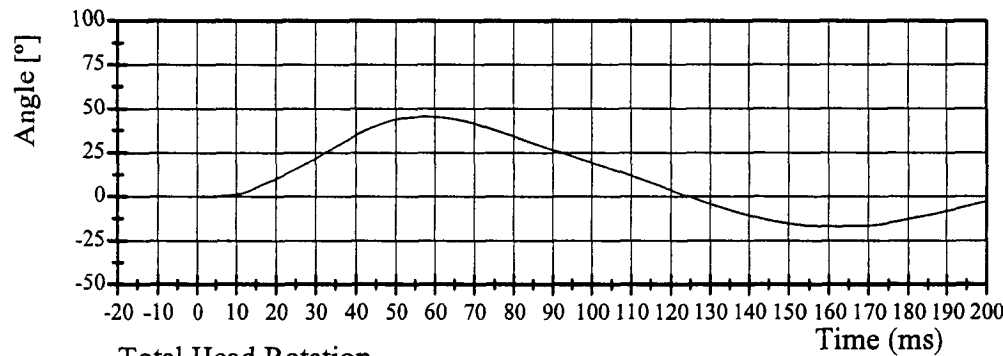


Filter Class: 60

Max: 25.5 ° at 61.8 ms

Min: -12.3 ° at 147.6 ms

Theta Rotation (at occipital condyles)

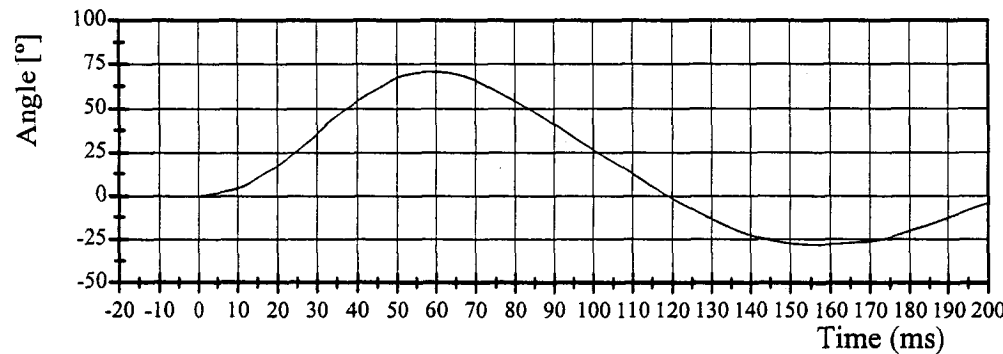


Filter Class: 60

Max: 45.2 ° at 57.7 ms

Min: -16.7 ° at 160.9 ms

Total Head Rotation



Filter Class: 60

Max: 70.6 ° at 59.2 ms

Min: -28.2 ° at 156.6 ms

10.07.2003 07:28:55 500



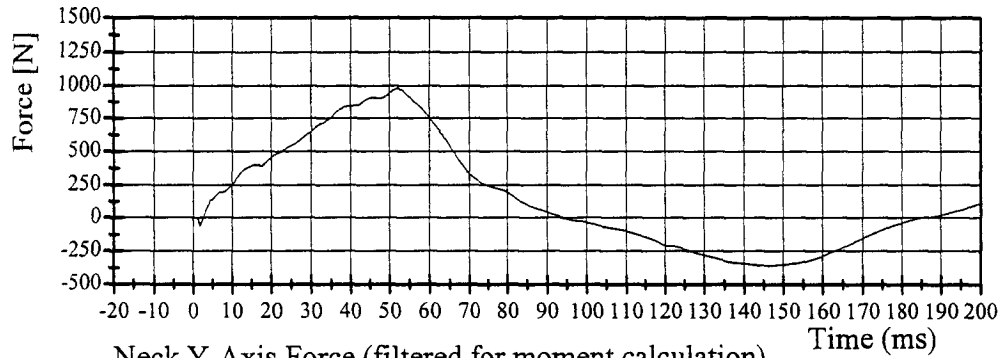
Transportation Research Center Inc.

572M Left Lateral Neck

SID HIII Serial No. 055 Calibration No. 09 - 1

Test Date 10/07/2003

Neck Y-Axis Force

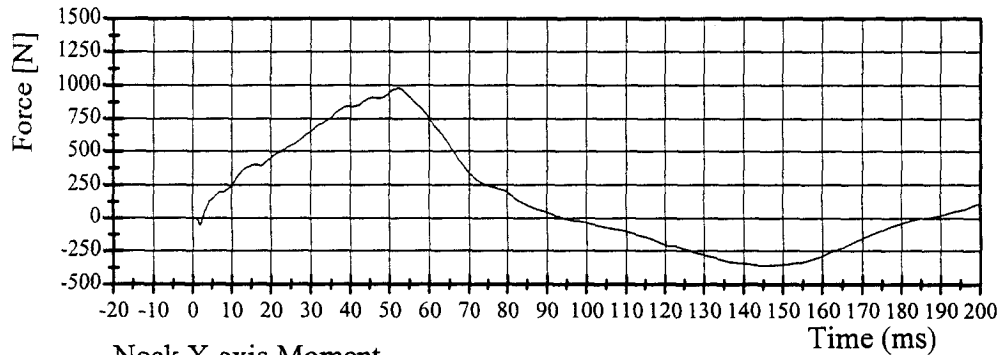


Filter Class: CFC 1000

Max: 979.9 N at 52.2 ms

Min: -358.2 N at 146.6 ms

Neck Y-Axis Force (filtered for moment calculation)

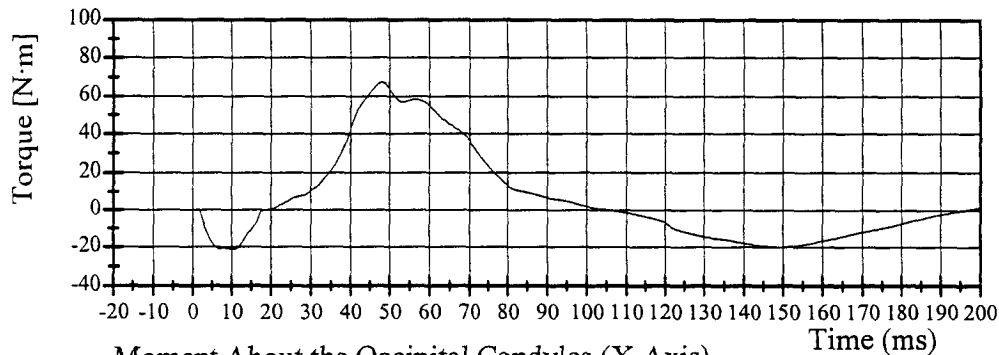


Filter Class: CFC 600

Max: 979.5 N·m at 52.2 ms

Min: -357.8 N·m at 146.7 m

Neck X-axis Moment

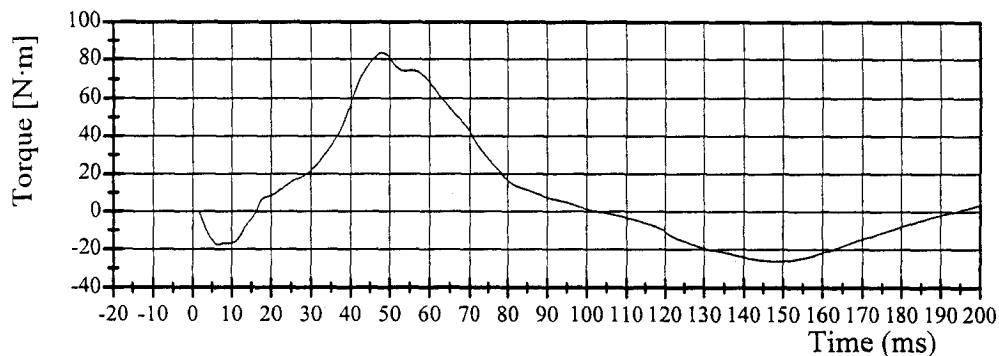


Filter Class: CFC 600

Max: 67.3 N·m at 48.2 ms

Min: -21.2 N·m at 9.9 ms

Moment About the Occipital Condyles (X-Axis)



Filter Class: 600

Max: 83.4 ° at 48.2 ms

Min: -26.3 ° at 148.4 ms

10.07.2003 07:28:57 500



Transportation Research Center Inc.

572F Thorax Test

SID HIII Serial No. 055 Calibration No. 09 - 1

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 C	21.7 C	Yes
Relative Humidity	10 - 70 %	31 %	Yes
Pendulum Velocity	4.21 - 4.33 m/sec	4.31 m/sec	Yes
Upper Rib Bar Peak Acceleration	37 - 46 g	38.3 g	Yes
Lower Rib Bar Peak Acceleration	37 - 46 g	37.2 g	Yes
Lower Thoracic Spine (T12) Peak Acceleration	15 - 22 g	17.0 g	Yes

Comments:

Technician



Approved



10.07.2003 07:34:05 1147



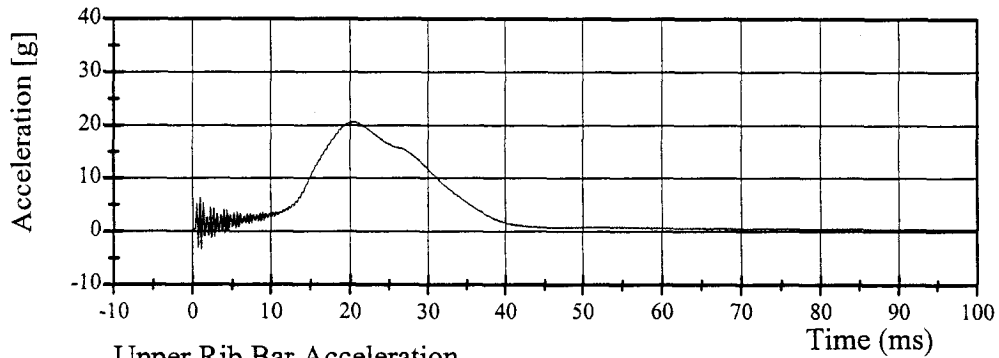
Transportation Research Center Inc.

572F Thorax Test

SID HIII Serial No. 055 Calibration No. 09 - 1

Test Date 10/06/2003

Pendulum Deceleration

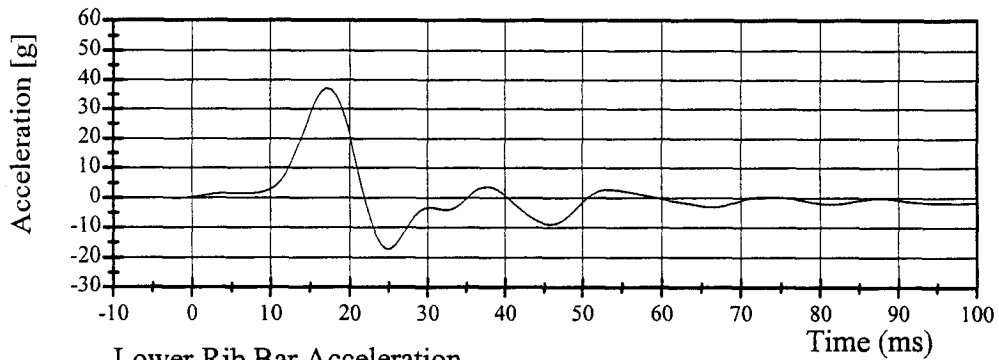


Filter Class: 1000

Max: 20.7 g at 20.3 ms

Min: -3.5 g at 1.1 ms

Upper Rib Bar Acceleration

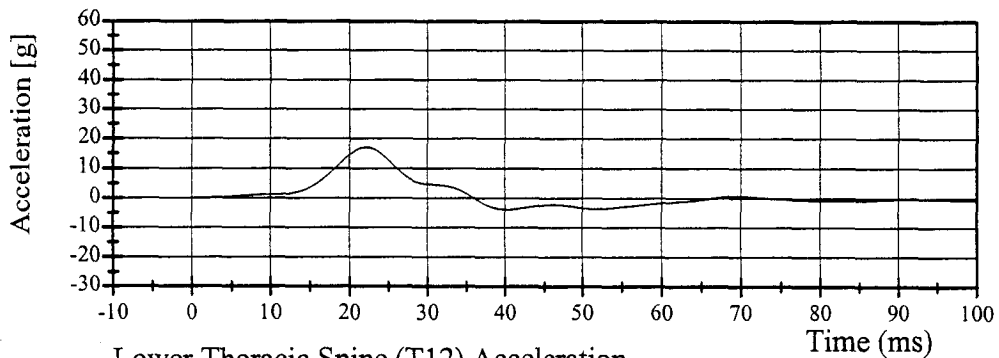


Filter Class: FIR 100

Max: 38.3 g at 17.7 ms

Min: -17.3 g at 25.2 ms

Lower Rib Bar Acceleration

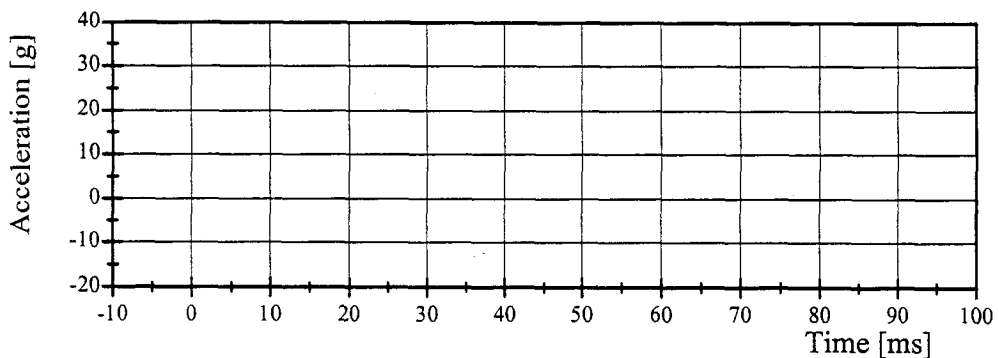


Filter Class: FIR 100

Max: 37.2 g at 17.1 ms

Min: -17.2 g at 25.1 ms

Lower Thoracic Spine (T12) Acceleration



Filter Class: FIR 100

Max: 17.0 g at 22.1 ms

Min: -3.9 g at 40.2 ms

10.07.2003 07:34:06 1147



Transportation Research Center Inc.

572B Abdomen Compression Test

SID HIII Serial No. 055 Calibration No. 09 - 1

Test Date 10/07/2003

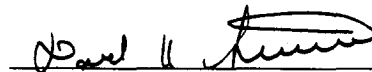
Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	30 %	Yes
Displacement Rate	6.35 - 8.89 mm/s	6.8 - 7.9 mm/s	Yes
Data Within Required Corridor	Yes	Yes	Yes

Comments:

Technician



Approved



10.07.2003 07:48:49 8

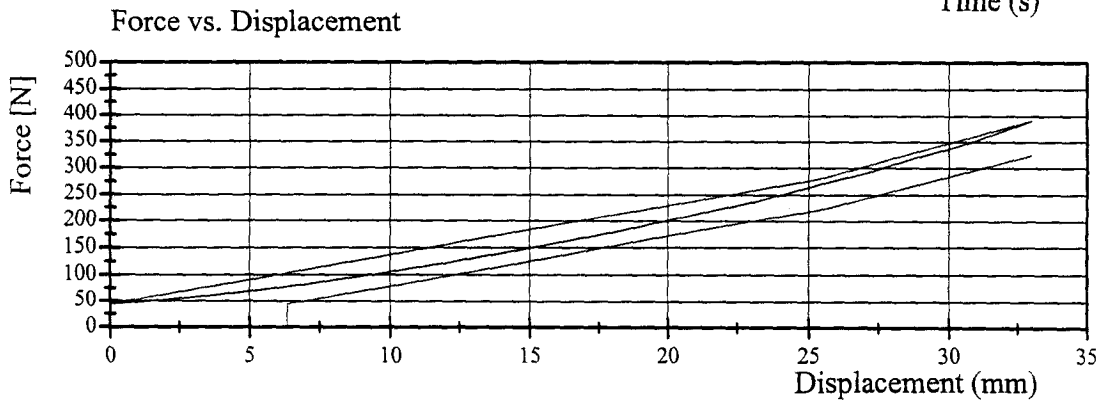
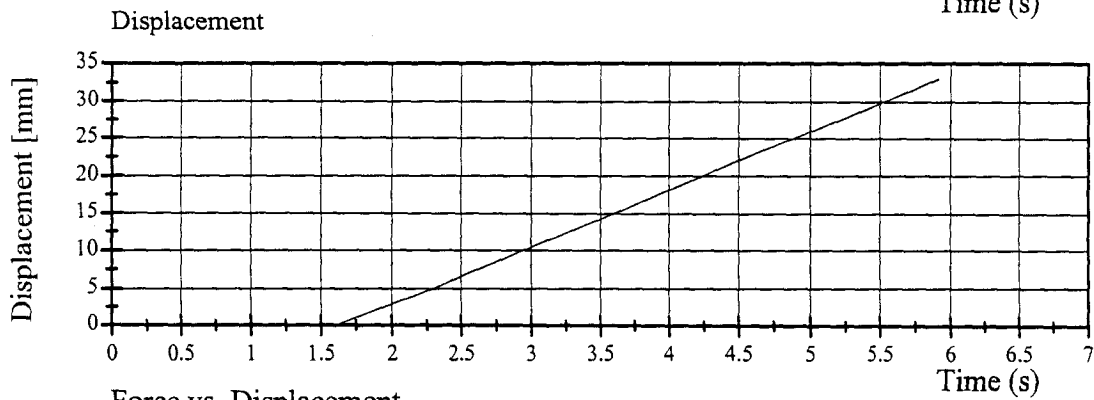
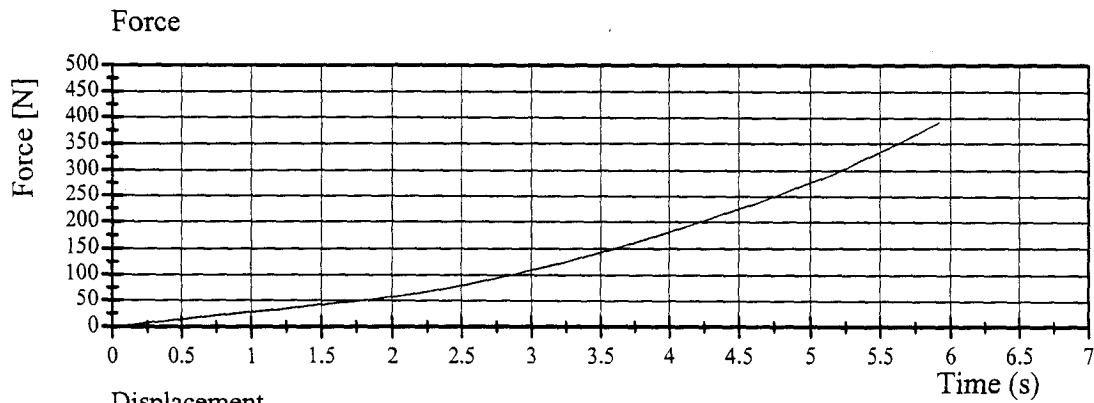


Transportation Research Center Inc.

572B Abdomen Compression Test

SID HIII Serial No. 055 Calibration No. 09 - 1

Test Date 10/07/2003



TRANSPORTATION RESEARCH CENTER INC.

PART 572B LUMBAR FLEXION TEST

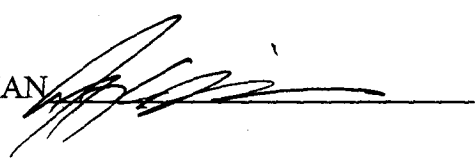
SID HIII

CAL DATE: 07-Oct-03

TRC, INC. TEST NO: LF05509 SID/HIII SN 055 TORSO FLEX CAL 09

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9 – 25.6° C	21.1 °C
RELATIVE HUMIDITY	10 – 70 %	30 %
FORCE AT 0 DEG. FLEXION	-27 – 27 N	0 N
FORCE AT 20 DEG OF FLEXION	98 – 151 N	133.4 N
FORCE AT 30 DEG OF FLEXION	151 – 205 N	164.6 N
FORCE AT 40 DEG OF FLEXION	205 – 258 N	200.2 N
NET RETURN ANGLE AFTER 3 MINUTES	< 12 °	5°

TEST MEETS SPECIFICATIONS

TECHNICIAN 

Transportation Research Center Inc.

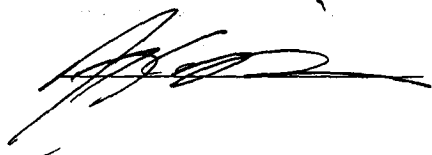
572F Pelvis Test

SID HIII Serial No. 055 Calibration No. 09 - 1

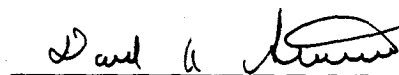
Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 C	21.1 C	Yes
Relative Humidity	10 - 70 %	22 %	Yes
Pendulum Velocity	4.21 - 4.33 m/sec	4.31 m/sec	Yes
Pelvis Peak Acceleration	40 - 60 g	44.6 g	Yes
Time Above 20 g	3 - 7 ms	6.00 ms	Yes
Unimodal requirement for pelvis acceleration	Yes	Yes	Yes

Comments:

Technician



Approved



10.07.2003 07:33:05 1152

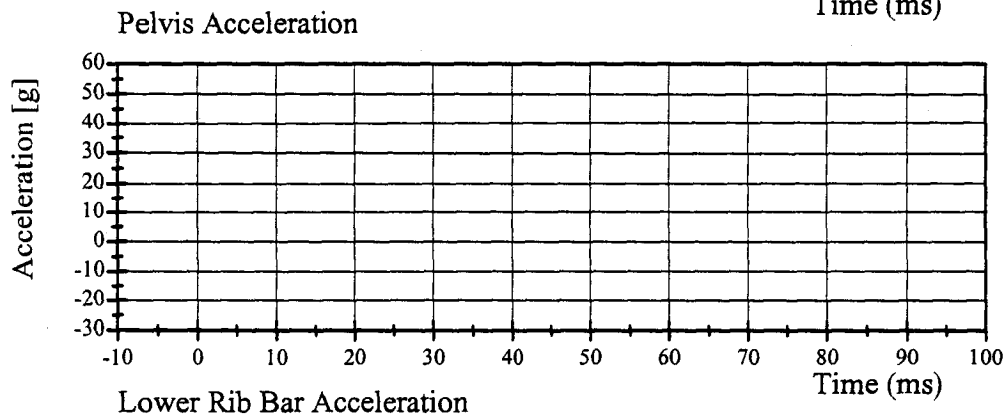
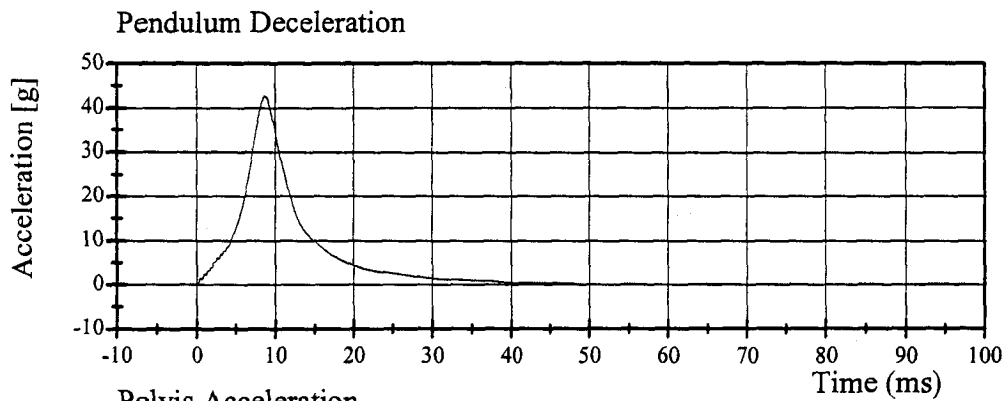


Transportation Research Center Inc.

572F Pelvis Test

SID HIII Serial No. 055 Calibration No. 09 - 1

Test Date 10/06/2003



Lower Rib Bar Acceleration

10.07.2003 07:33:06 1152



Calibration Test Results

Post-Test

SID HIII: 906

Configured for Left Side Impact

External Dimensions:	The dummy passed all external dimension requirements.
Lateral Head Drop Test:	The head passed all lateral drop test requirements.
Lateral Neck Test:	The neck passed all impact test requirements.
Lateral Thorax Impact Test:	The thorax passed all impact test requirements.
Thoracic Shock Absorber Test:	The thoracic shock absorber was not tested at this time.
Lumbar Flexion Test:	The dummy met the lumbar flexion test requirements.
Abdominal Compression Test:	The abdomen met the compression test requirements.
Pelvis Impact Test:	The lateral pelvis passed all impact test requirements.

Transportation Research Center Inc.

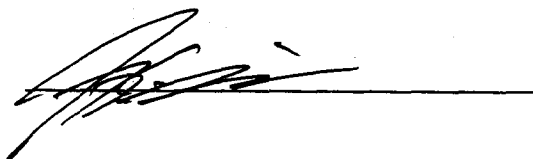
SID/HIII Dummy

External Dimensions

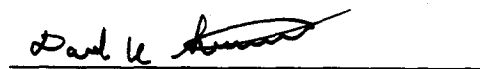
Serial No. 906 Calibration No. 03

Test Parameter	Dimension	Specification	Results	Pass
Seated Height	SH	889.0 - 909.3 mm	904 mm	Yes
Rib Height	RH	501.7 - 520.7 mm	506 mm	Yes
Hip Pivot Height	HP	99.1 REF mm	99.1 mm	
Rib From Backline	RD	228.6 - 241.3 mm	229 mm	Yes
Knee Pivot From Backline	KH	510.5 - 525.8 mm	525 mm	Yes
Knee Pivot From Floor	KV	490.2 - 505.5 mm	491 mm	Yes
Hip Width	HW	355.6 - 391.2 mm	384 mm	Yes
Top Rib Width From CVL	RW-1	165.1 - 180.3 mm	178 mm	Yes
Bottom Rib Width From CVL	RW-2	165.1 - 180.3 mm	177 mm	Yes
Difference Between Top & Bottom Rib Width from CVL		$\leq$ 2.5 mm	1.0 mm	Yes

Technician



Approved



Transportation Research Center Inc.

572M Left Left Lateral Head Test

SID HIII Serial No. 906 Calibration No. 03 - 1

Test Date 10/07/2003

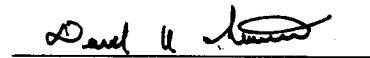
Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	30 %	Yes
Peak Resultant Acceleration	115 - 150 g	137.2 g	Yes
Peak Longitudinal Acceleration	15 g Max	13.3 g	Yes
Is Acceleration Curve Unimodal?	Yes	Yes	Yes

Comments:

Technician



Approved



10.07.2003 06:19:30 604

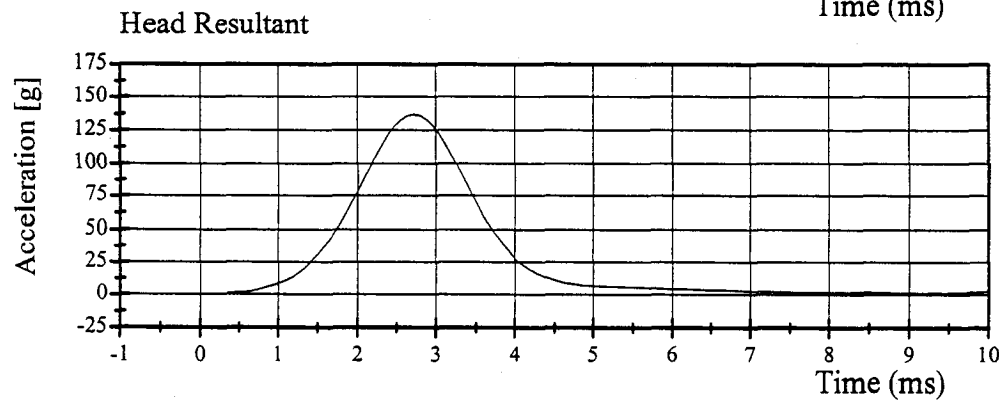
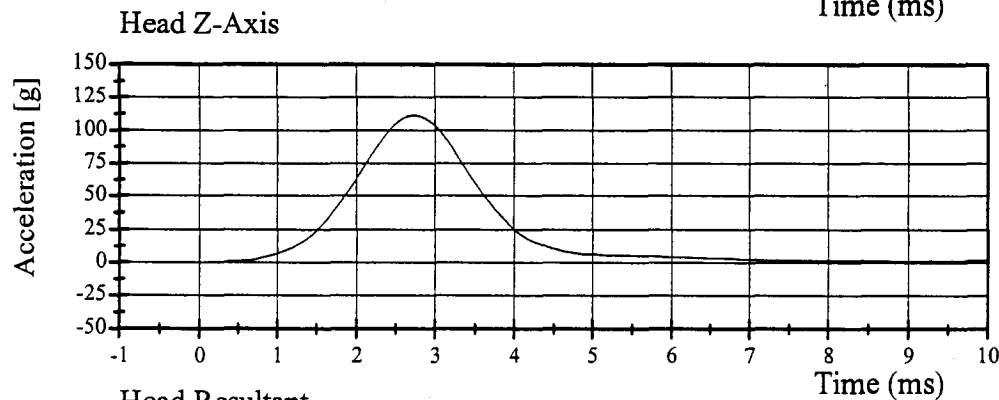
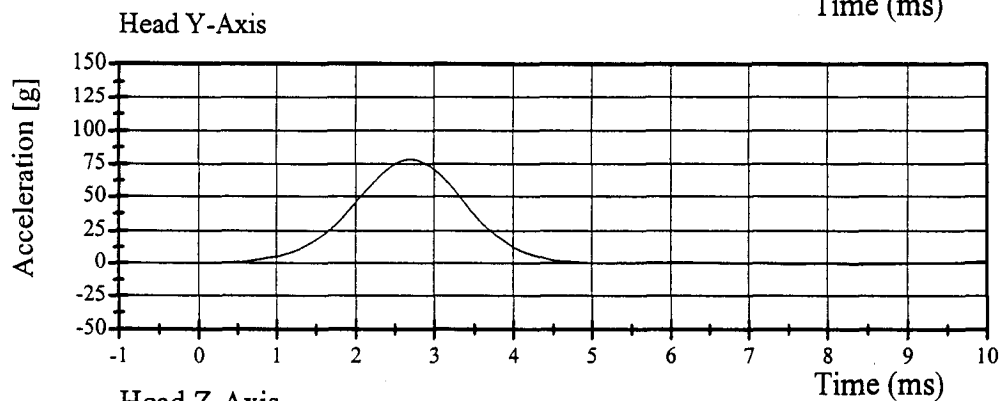
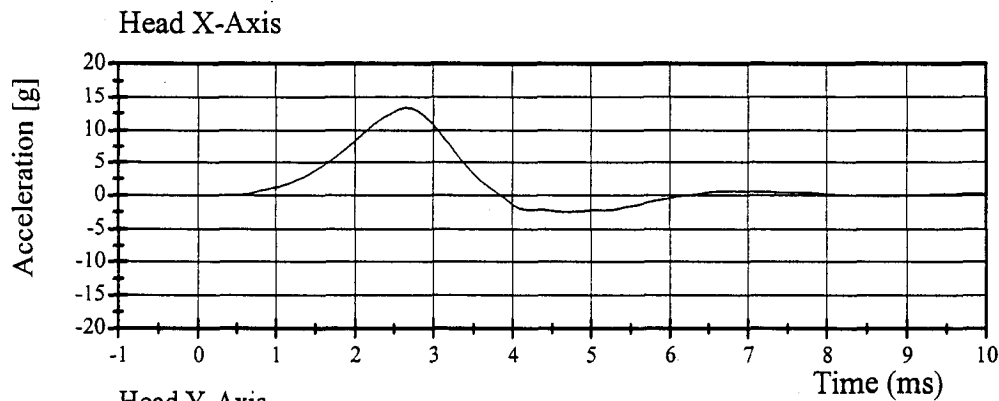


Transportation Research Center Inc.

572M Left Left Lateral Head Test

SID HIII Serial No. 906 Calibration No. 03 - 1

Test Date 10/07/2003



10.07.2003 06:19:31 604



Transportation Research Center Inc.

572M Left Left Lateral Neck Test Test

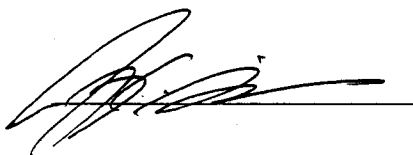
SID HIII Serial No. 906 Calibration No. 03 - 1

Test Date 10/07/2003

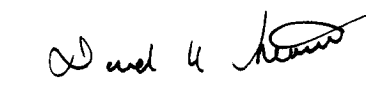
Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	30 %	Yes
Impact Velocity	6.89 - 7.13 m/s	7.06 m/s	Yes
Integrated Pendulum Velocity			
10 ms	1.96 - 2.55 m/s	2.10 m/s	Yes
20 ms	4.12 - 5.10 m/s	4.56 m/s	Yes
30 ms	5.73 - 7.64 m/s	6.56 m/s	Yes
40 - 70 ms	6.27 - 7.64 m/s	7.11 - 7.23 m/s	Yes
Peak D Plane Rotation	66 - 82 °	68.9 °	Yes
Rotation Decay Time To 0° From Peak Angle	58 - 67 °	61.6 °	Yes
Peak Moment About Occipital Condyles	73.0 - 88.0 N·m	75.61 N·m	Yes
Moment Decay Time To 0 N·m From Peak Moment	49 - 64 ms	56.32 ms	Yes
Time Between Peak Rotation and Peak Moment	2 - 16 ms	10.56 ms	Yes

Comments:

Technician



Approved



10.07.2003 06:45:43 483



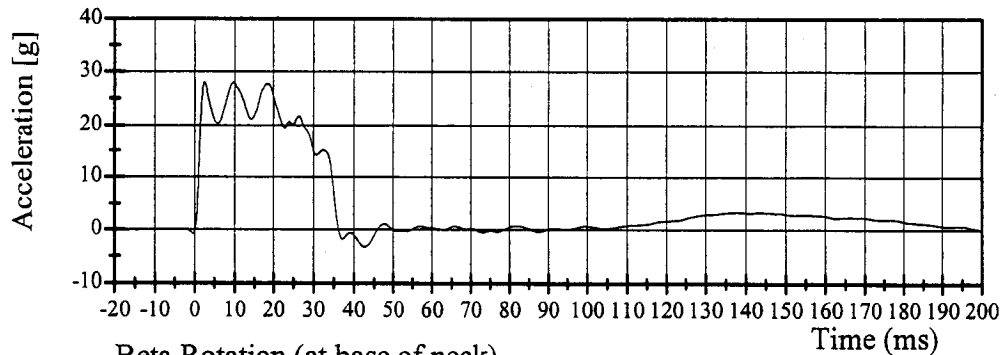
Transportation Research Center Inc.

572M Left Left Lateral Neck Test Test

SID HIII Serial No. 906 Calibration No. 03 - 1

Test Date 10/07/2003

Pendulum Deceleration

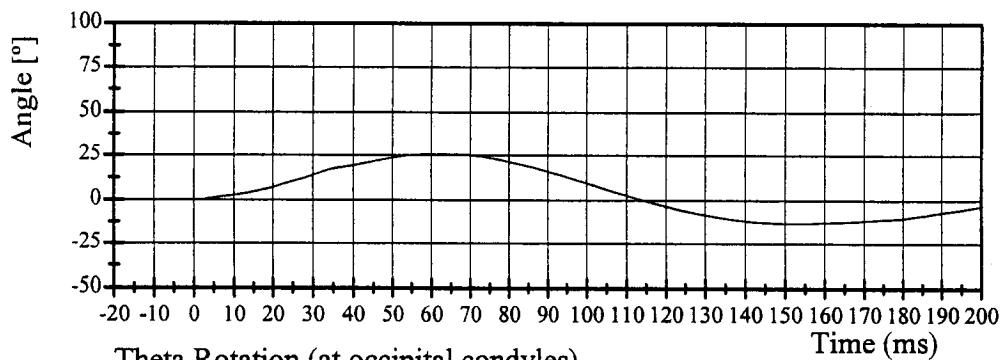


Filter Class: 180

Max: 28.1 g at 9.8 ms

Min: -3.3 g at 42.7 ms

Beta Rotation (at base of neck)

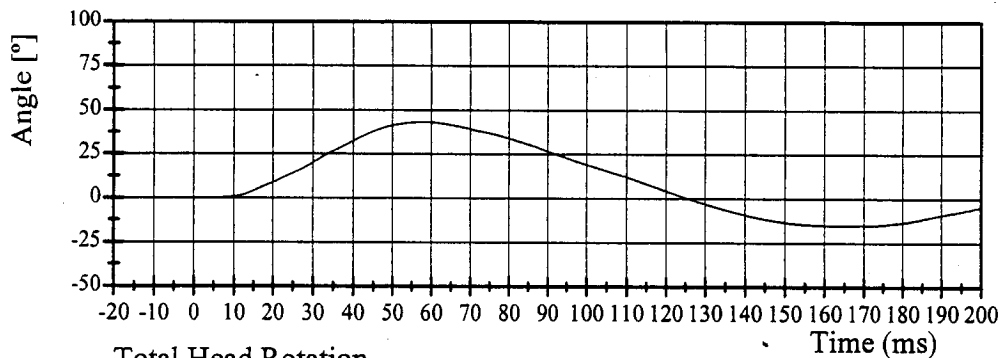


Filter Class: 60

Max: 25.7 ° at 64.6 ms

Min: -13.3 ° at 152.8 ms

Theta Rotation (at occipital condyles)

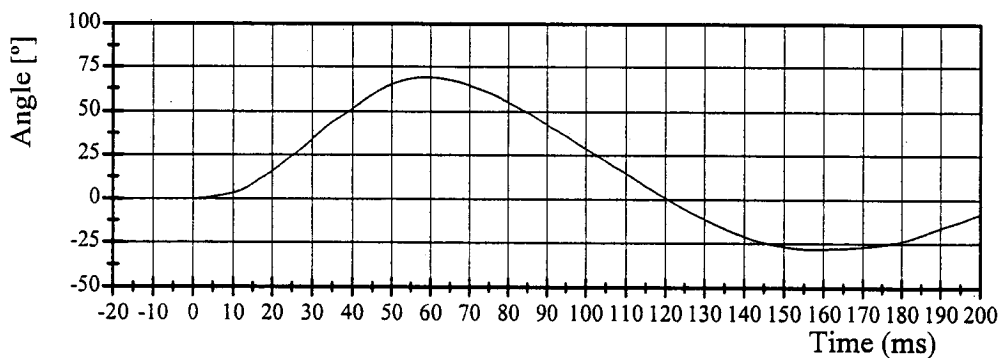


Filter Class: 60

Max: 43.2 ° at 58.2 ms

Min: -15.3 ° at 163.0 ms

Total Head Rotation



Filter Class: 60

Max: 68.9 ° at 59.1 ms

Min: -28.1 ° at 157.3 ms

10.07.2003 06:45:43 483



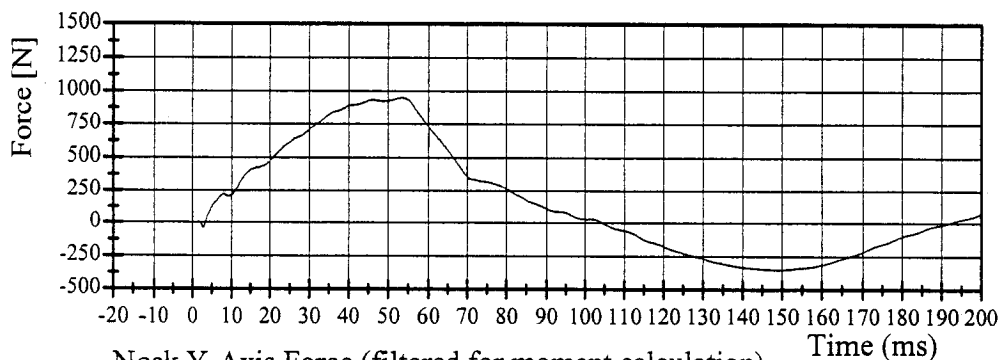
Transportation Research Center Inc.

572M Left Left Lateral Neck Test

SID HIII Serial No. 906 Calibration No. 03 - 1

Test Date 10/07/2003

Neck Y-Axis Force

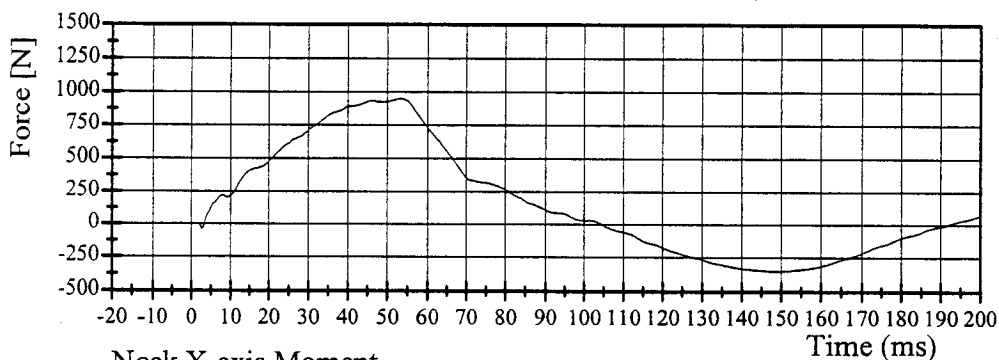


Filter Class: CFC 1000

Max: 950.3 N at 53.2 ms

Min: -350.8 N at 149.6 ms

Neck Y-Axis Force (filtered for moment calculation)

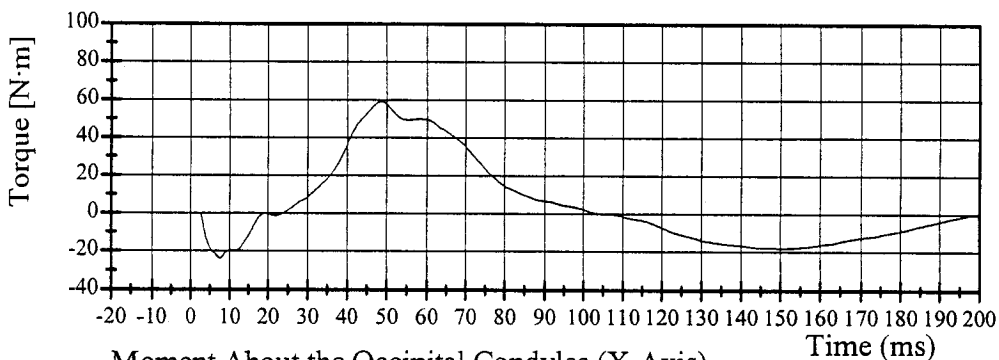


Filter Class: CFC 600

Max: 949.6 N·m at 53.4 ms

Min: -350.3 N·m at 148.5 m

Neck X-axis Moment

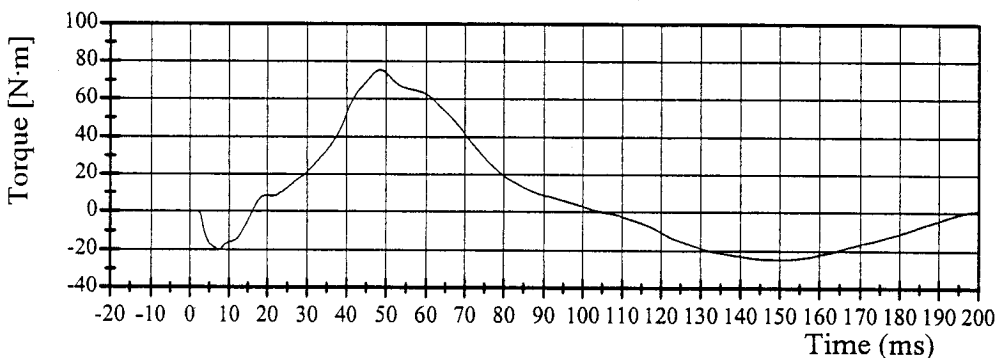


Filter Class: CFC 600

Max: 59.2 N·m at 48.5 ms

Min: -23.8 N·m at 7.6 ms

Moment About the Occipital Condyles (X-Axis)



Filter Class: 600

Max: 75.6 ° at 48.6 ms

Min: -24.4 ° at 150.9 ms

10.07.2003 06:45:45 483



Transportation Research Center Inc.

572F Left Side Thorax Test

SID HIII Serial No. 906 Calibration No. 03 - 1

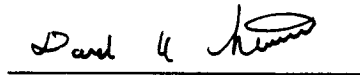
Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 C	21.1 C	Yes
Relative Humidity	10 - 70 %	31 %	Yes
Pendulum Velocity	4.21 - 4.33 m/sec	4.32 m/sec	Yes
Upper Rib Bar Peak Acceleration	37 - 46 g	42.6 g	Yes
Lower Rib Bar Peak Acceleration	37 - 46 g	43.3 g	Yes
Lower Thoracic Spine (T12) Peak Acceleration	15 - 22 g	19.7 g	Yes

Comments:

Technician



Approved



10.07.2003 08:33:19 1143



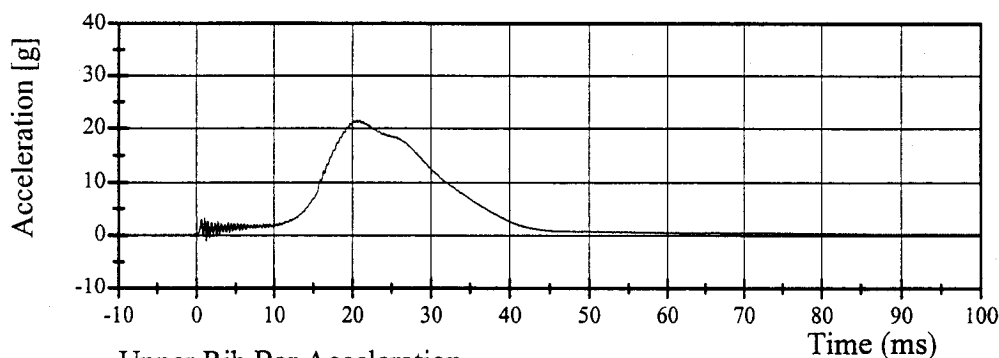
Transportation Research Center Inc.

572F Left Side Thorax Test

SID HIII Serial No. 906 Calibration No. 03 - 1

Test Date 10/07/2003

Pendulum Deceleration

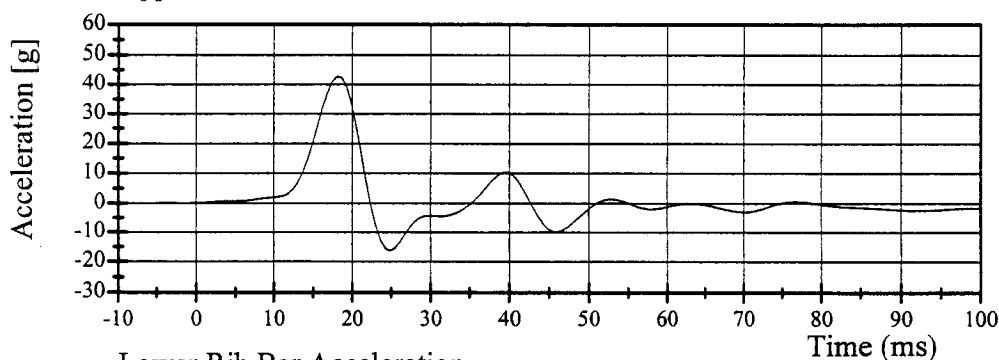


Filter Class: 1000

Max: 21.5 g at 20.6 ms

Min: -1.1 g at 1.3 ms

Upper Rib Bar Acceleration

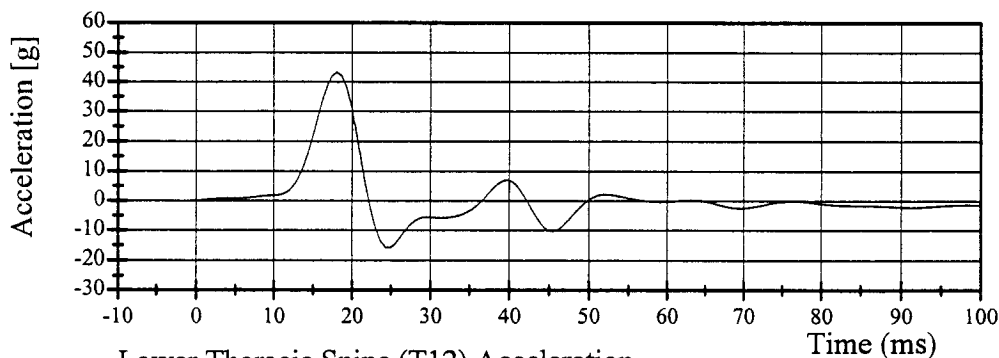


Filter Class: FIR 100

Max: 42.6 g at 18.1 ms

Min: -16.3 g at 24.9 ms

Lower Rib Bar Acceleration

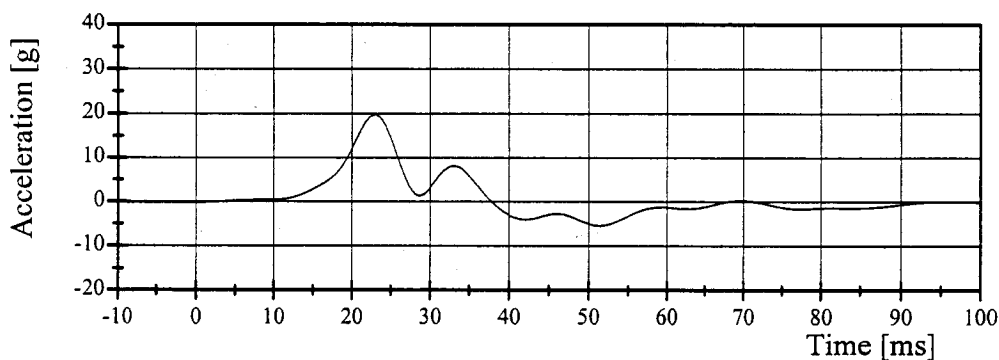


Filter Class: FIR 100

Max: 43.3 g at 18.0 ms

Min: -15.8 g at 24.9 ms

Lower Thoracic Spine (T12) Acceleration



Filter Class: FIR 100

Max: 19.7 g at 23.0 ms

Min: -5.4 g at 51.2 ms

10.07.2003 08:33:20 1143



Transportation Research Center Inc.

572B Abdomen Compression Test

SID HIII Serial No. 906 Calibration No. 03 - 1

Test Date 10/06/2003

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	30 %	Yes
Displacement Rate	6.35 - 8.89 mm/s	7.2 - 8.0 mm/s	Yes
Data Within Required Corridor	Yes	Yes	Yes

Comments:

Technician

John K. Clancy

Approved

V. J. Walter

10.06.2003 15:38:47 119

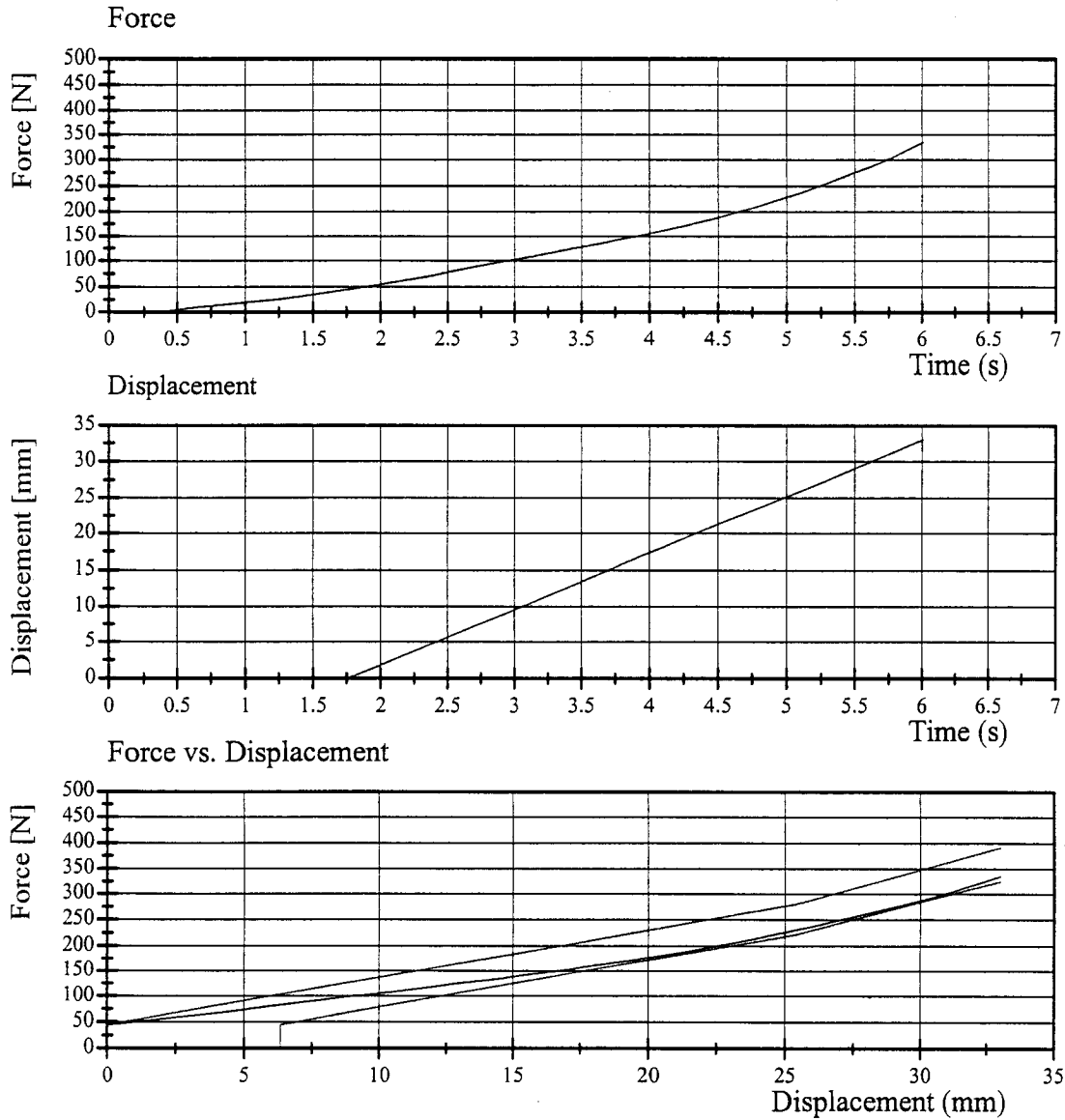


Transportation Research Center Inc.

572B Abdomen Compression Test

SID HIII Serial No. 906 Calibration No. 03 - 1

Test Date 10/06/2003



10.06.2003 15:38:48 119



TRANSPORTATION RESEARCH CENTER INC.

PART 572B LUMBAR FLEXION TEST

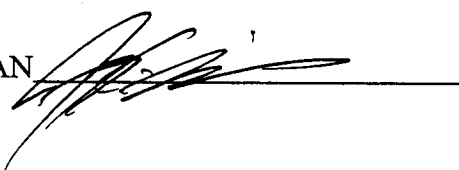
SID HIII

CAL DATE: 07-Oct-03

TRC, INC. TEST NO: 906C03TF1 SID/HIII SN 906 TORSO FLEX CAL 03

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9 – 25.6° C	21.1 °C
RELATIVE HUMIDITY	10 – 70 %	31 %
FORCE AT 0 DEG. FLEXION	-27 – 27 N	0 N
FORCE AT 20 DEG OF FLEXION	98 – 151 N	137.8 N
FORCE AT 30 DEG OF FLEXION	151 – 205 N	173.5 N
FORCE AT 40 DEG OF FLEXION	205 – 258 N	240.2 N
NET RETURN ANGLE AFTER 3 MINUTES	< 12 °	7 °

TEST MEETS SPECIFICATIONS

TECHNICIAN 

Transportation Research Center Inc.

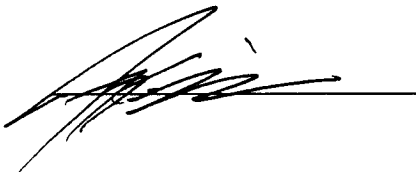
572F Left Side Pelvis Test

SID HIII Serial No. 906 Calibration No. 03 - 1

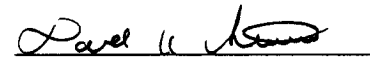
Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 C	21.1 C	Yes
Relative Humidity	10 - 70 %	31 %	Yes
Pendulum Velocity	4.21 - 4.33 m/sec	4.31 m/sec	Yes
Pelvis Peak Acceleration	40 - 60 g	45.8 g	Yes
Time Above 20 g	3 - 7 ms	5.92 ms	Yes
Unimodal requirement for pelvis acceleration	Yes	Yes	Yes

Comments:

Technician



Approved



10.07.2003 08:30:37 1168

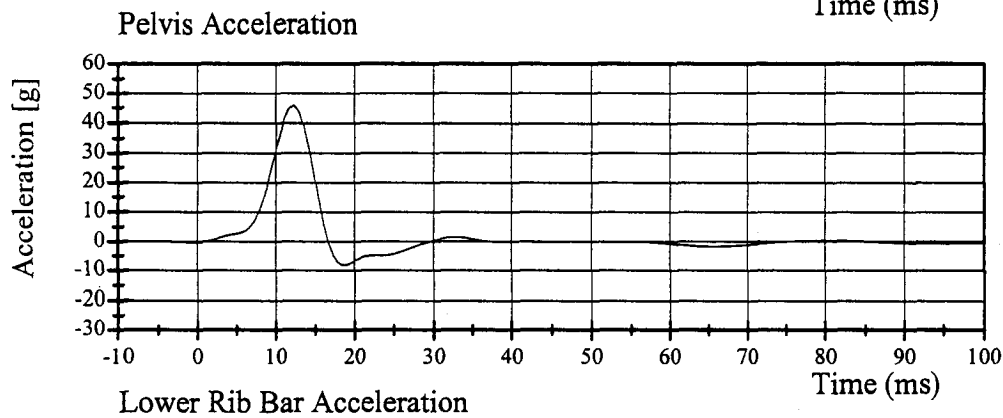
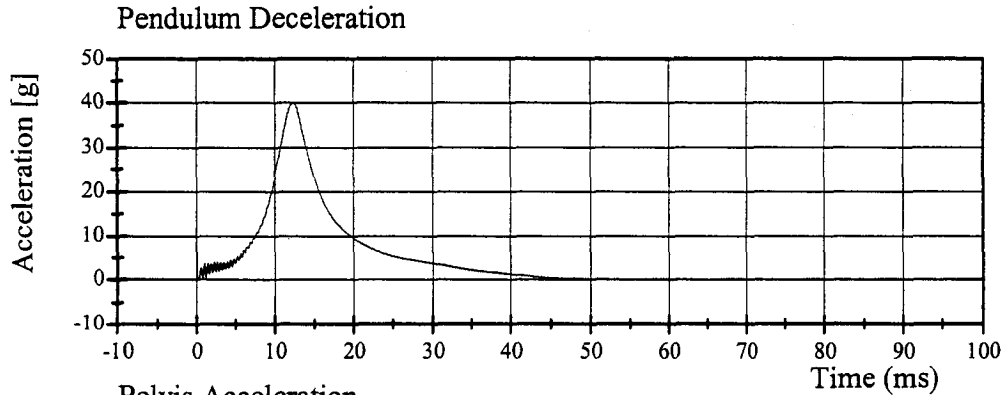


Transportation Research Center Inc.

572F Left Side Pelvis Test

SID HIII Serial No. 906 Calibration No. 03 - 1

Test Date 10/07/2003



10.07.2003 08:30:38 1168



Type: SID HIII S/N: 055 Mfr: ASTC Test Date: 09/24/03Proj./Seg. No.: 20020455-2010 Test Eng.: Walt Dudek

ITEM	PRE-USE	
HEAD:		
Head Ballast Condition	X	
Accel. Mount Bolts and Cables	X	
Skull Cap Bolts	X	
Head Skin Condition	X	
Accel. Cable Exit (left or right)	(Left)	(Right) N/A
NECK:		
Rubber Condition and Separation From End Caps	X	
THORAX: Left side configuration		
Stacked Shoulder Foams and Bolts	X	
* Rib Cage Spring and Support Assembly	X	
* Rib Cage Bolts	X	
* Damper Rear Attachment Ring, Pivot Pins, and Bracket	X	
* Location and Adjustment of Chest Pot Bracket and Collars	X	
* Chest Pot Rod End Nuts and Eyebolt	X	
Arm Foam Orientation	X	
Thorax/Lumbar Spine Bolts	X	
PELVIS:		
Tightness and Alignment of H-Point Tool Insert	X	
* Hips Range of Motion and 1-2g Adjustment (before calibration only)	X	
Upper Femur Bolt Adjustment and Position	X	
Check Spine Kits (Yellow tape = Kits/No tape = No kits)	(With) X	(Without)
LEGS AND FEET:		
Femur Load Cell Bolts (30 ft/lbs)	X	
Breakaway Femur Bolts	X	
Knee Joint Function and Range of Motion	X	
Leg Skin Condition and Position	X	
Ankle Range of Motion	X	
Foot Condition	X	
OTHER:		
Cleanliness	X	
Target Position	X	
Clothes	X	
Shoes	X	
Knee & Ankle One G Joint Adjustments	X	

Inspection Completed By: J. Clarridge Date: 09/23/03

Transportation Research Center Inc.

SID HIII Pre-Use Inspection

Type: SID HIII S/N: 906 Mfr: Unknown Test Date: 09/24/03

Proj./Seg. No.: 20020455-2010 Test Eng.: Walt Dudek

ITEM	PRE-USE	
HEAD:		
Head Ballast Condition	X	
Accel. Mount Bolts and Cables	X	
Skull Cap Bolts	X	
Head Skin Condition	X	
Accel. Cable Exit (left or right)	(Left)	(Right) N/A
NECK:		
Rubber Condition and Separation From End Caps	X	
THORAX: Left side configuration		
Stacked Shoulder Foams and Bolts	X	
* Rib Cage Spring and Support Assembly	X	
* Rib Cage Bolts	X	
* Damper Rear Attachment Ring, Pivot Pins, and Bracket	X	
* Location and Adjustment of Chest Pot Bracket and Collars	X	
* Chest Pot Rod End Nuts and Eyebolt	X	
Arm Foam Orientation	X	
Thorax/Lumbar Spine Bolts	X	
PELVIS:		
Tightness and Alignment of H-Point Tool Insert	X	
* Hips Range of Motion and 1-2g Adjustment (before calibration only)	X	
Upper Femur Bolt Adjustment and Position	X	
Check Spine Kits (Yellow tape = Kits/No tape = No kits)	(With) X	(Without)
LEGS AND FEET:		
Femur Load Cell Bolts (30 ft/lbs)	X	
Breakaway Femur Bolts	X	
Knee Joint Function and Range of Motion	X	
Leg Skin Condition and Position	X	
Ankle Range of Motion	X	
Foot Condition	X	
OTHER:		
Cleanliness	X	
Target Position	X	
Clothes	X	
Shoes	X	
Knee & Ankle One G Joint Adjustments	X	

Inspection Completed By: J. Clarridge Date: 09/23/03

Transportation Research Center Inc.

SID HIII Post-Use Inspection

Type: SID HIII S/N: 055 Mfr: ASTC Test Date: 09/24/03

Proj./Seg. No.: 20020455-2010 Test Eng.: Walt Dudek

ITEM	POST-USE
HEAD:	
Head Skin Condition	X
Head Ballast Condition	X
NECK:	
Rubber Condition and Separation From End Caps	X
THORAX: Left side configuration	
Jacket Condition	X
Arm Foam Condition	X
Damper and Chest Pot Movement and Condition	X
Rib Cage Spring and Support Assembly Condition	X
Rib Wrap Condition	X
Abdomen condition	X
Thorax/Lumbar Spine Bolts	X
Lumbar Spine Condition and Separation From End Caps	X
PELVIS:	
Iliac Crest bone	X
Flesh Condition	X
Hip Range of Motion	X
LEGS AND FEET:	
Knee Skins and Castings Condition	X
Leg Skin Condition	X
Foot Condition	X
Knee Joint Range of Motion	X
Ankle Range of Motion	X

NOTES: No damage to report.

Inspection Completed By: J. Clarridge

Date: 10/02/03

Transportation Research Center Inc.

SID HIII Post-Use Inspection

Type: SID HIII S/N: 906 Mfr: Unknown Test Date: 09/24/03

Proj./Seg. No.: 20020455-2010 Test Eng.: Walt Dudek

ITEM	POST-USE
HEAD:	
Head Skin Condition	X
Head Ballast Condition	X
NECK:	
Rubber Condition and Separation From End Caps	X
THORAX: Left side configuration	
Jacket Condition	X
Arm Foam Condition	X
Damper and Chest Pot Movement and Condition	X
Rib Cage Spring and Support Assembly Condition	X
Rib Wrap Condition	X
Abdomen condition	X
Thorax/Lumbar Spine Bolts	X
Lumbar Spine Condition and Separation From End Caps	X
PELVIS:	
Iliac Crest bone	X
Flesh Condition	X
Hip Range of Motion	X
LEGS AND FEET:	
Knee Skins and Castings Condition	X
Leg Skin Condition	X
Foot Condition	X
Knee Joint Range of Motion	X
Ankle Range of Motion	X

NOTES: No damage to report.

Inspection Completed By: J. Clarridge

Date: 10/02/03

Appendix D

Test Equipment List and Calibration Information

Sign Convention
SAE J211 MAR95

Accelerometers:

+X: Forward
+Y: Rightward
+Z: Downward

Potentiometers:

+Chest longitudinal deflection: Outward
+Chest lateral deflection: Rightward
+Seat belt displacement: Outward
+Seat belt extension: Elongation
+Knee slider displacement: Distance between femur and tibia
increased (in relation to a seated
dummy)

Rotation potentiometers:

+About the X-axis: Left foot-eversion
Right foot-inversion
+About the Y-axis: Left/right foot-dorsiflexion
+About the Z-axis: Left foot-internal
Right foot-external

Load cells:

+Femur force: Tension
+Seat belt force: Tension
+Barrier force: Tension

Neck load cells:

+X force: Head pushed rearward
+Y force: Head pushed leftward
+Z force: Head pulled upward (tension on neck)
+X moment: Left ear rotating toward left shoulder
+Y moment: Chin rotating toward chest
+Z moment: Chin rotating toward left shoulder

Tibia load cells:

+X force: Ankle forward, knee rearward
+Y force: Ankle rightward, knee leftward
+Z force: Tension
+X moment: Bottom of tibia moving leftward
+Y moment: Bottom of tibia moving rearward

Sign Convention. Cont'd.
SAE J211 MAR95

Lumbar load cells:

+X force:	Chest rearward, pelvis forward
+Y force:	Chest leftward, pelvis rightward
+Z force:	Chest upward, pelvis downward
+X moment:	Left shoulder toward left hip
+Y moment:	Sternum toward front of legs
+Z moment:	Right shoulder forward, left shoulder rearward

Frequency Response Classes
SAE J211 MAR95

<u>Typical Test Measurements</u>	<u>Channel Class</u>
Vehicle Structural Accelerations for use in:	
Total vehicle comparison	60
Collision simulation input	60
Component analysis	600
Integration for velocity or displacement	180
Barrier Face Forces	60
Belt Restraint System Loads	60
Anthropomorphic Test Device	
Head accelerations (linear and angular)	1000
Neck	
Forces	1000
Moments	600
Thorax	
Spine accelerations	180
Rib accelerations	1000
Sternum accelerations	1000
Deflections	600
Lumbar	
Forces	1000
Moments	1000
Pelvis	
Accelerations	1000
Forces	1000
Moments	1000
Femur/Knee/Tibia/Ankle	
Forces	600
Moments	600
Displacements	180
Sled Accelerations	60
Steering Column Loads	600
Head Form Accelerations	1000

The direction column on the following sheets describes the transducer output as mounted and wired in the test location. The polarity column indicates whether a polarity change occurred during data acquisition to conform to J211 MAR95. See Report Sign Convention sheet for description of data output as presented in the report: occasionally channels have been adjusted in post-acquisition processing to conform to J211 MAR95.

Channel Report

9/24/2003 7:58:42 AM

Name of Test 030924-1

System

MINIDAU

Name of DAU DAU6

Chan.#	Sensor #	Mnemonic	Description	Dir.	Range	Pol. Cal.	Group	Mfg.	Model
6001	P25298	HEDXG1	Head Accel X	Rwd	801.41499	-	055n	Endevco	7264C-2K-2-180
6002	P25061	HEDYG1	Head Accel Y	Lft	807.76208	-	055n	Endevco	7264C-2K-2-180
6003	P25261	HEDZG1	Head Accel Z	Up	803.12465	-	055n	Endevco	7264C-2K-2-180
6004	P25067	HEDXR1	Head Accel X Red	Rwd	803.43972	-	055n	Endevco	7264C-2K-2-180
6005	P24511	HEDYR1	Head Accel Y Red	Lt	789.83092	-	055n	Endevco	7264C-2K-2-180
6006	P25063	HEDZR1	Head Accel Z Red	Up	806.42620	-	055n	Endevco	7264C-2K-2-180
6007	1716-0534-FX	NEKXF1	Neck Force X	Hd	8890.8019	-	055n	Denton	1716
6008	1716-0534-FY	NEKYF1	Neck Force Y	Hd	8885.0977	+	055n	Denton	1716
6009	1716-0534-FZ	NEKZF1	Neck Force Z	Hd	13357.627	+	055n	Denton	1716
6010	1716-0534-MX	NEKXM1	Neck Moment X	Rt Ear	282.37048	-	055n	Denton	1716
6011	1716-0534-MY	NEKYM1	Neck Moment Y	Chn	282.42609	+	055n	Denton	1716
6012	1716-0534-MZ	NEKZM1	Neck Moment Z	Chn	282.48456	+	055n	Denton	1716
6013	P25068	LURYG1	Left Upper Rib Y	Rgt	794.82124	+	055n	Endevco	7264C-2K-2-180
6014	P25069	LURYR1	Left Upper Rib Red Y	Rgt	808.28492	+	055n	Endevco	7264C-2K-2-180
6015	P25305	LLRYG1	Left Lower Rib Y	Rgt	802.92314	+	055n	Endevco	7264C-2K-2-180
6016	P25395	LLRYR1	Left Lower Rib Red Y	Rgt	806.45161	+	055n	Endevco	7264C-2K-2-180
6017	P24393	T12YG1	Lower Spine Y	Lft	402.81973	-	055n	Endevco	7264C-2K-2-180
6018	P24627	T12YR1	Lower Spine Red Y	Lft	402.18373	-	055n	Endevco	7264C-2K-2-180
6019	P25397	PEVYG1	Pelvis Accel Y	Lft	398.38157	-	055n	Endevco	7264C-2K-2-180
6020	P25231	PEVYR1	Pelvis Accel Red Y	Lft	399.27631	-	055n	Endevco	7264C-2K-2-180
6021	J26885	HEDXG4	Head Accel X	Rwd	803.17505	-	096n	Endevco	7264-2000TZ
6022	J26864	HEDYG4	Head Accel Y	Lft	790.78244	-	096n	Endevco	7264-2000TZ
6024	J27950	HEDZG4	Head Accel Z	Up	791.95668	-	096n	Endevco	7264-2000TZ
6025	J27271	HEDXR4	Head Accel X Red	Rwd	799.75007	-	096n	Endevco	7264-2000TZ
6026	J27283	HEDYR4	Head Accel Y Red	Lt	809.00012	-	096n	Endevco	7264-2000TZ
6027	J26980	HEDZR4	Head Accel Z Red	Up	789.53861	-	096n	Endevco	7264-2000TZ
6028	1716A-1535-FX	NEKXF4	Neck Force X	Hd	8891.7885	-	096n	Denton	1716A
6029	1716A-1535-FY	NEKYF4	Neck Force Y	Hd	8908.0907	+	096n	Denton	1716A
6030	1716A-1535-FZ	NEKZF4	Neck Force Z	Hd	13330.563	+	096n	Denton	1716A
6031	1716A-1535-MX	NEKXM4	Neck Moment X	Rt Ear	282.72169	-	096n	Denton	1716A
6032	1716A-1535-MY	NEKYM4	Neck Moment Y	Chn	282.57318	+	096n	Denton	1716A

Channel Report

9/24/2003 7:58:43 AM

Name of Test 030924-1

System MINIDAU

Name of DAU DAU7

Chan.#	Sensor #	Mnemonic	Description	Dir.	Range	Pol. Cal.	Group	Mfg.	Model
7001	1716A-1535-MZ	NEKZM4	Neck Moment Z	Chn	283.00597	N-m	OK	906n	1716A
7002	P27850	LURYG4	Left Upper Rib Y	Rgt	792.32435	g	OK	906n	Endevco
7003	P25374	LURYR4	Left Upper Rib Red Y	Rgt	799.23822	g	OK	906n	Endevco
7004	P29211	LLRYG4	Left Lower Rib Y	Rgt	787.98325	g	OK	906n	Endevco
7005	P25075	LLRYR4	Left Lower Rib Red Y	Rgt	797.20976	g	OK	906n	Endevco
7006	P21635	T12YG4	Lower Spine Y	Lft	397.33043	g	OK	906n	Endevco
7007	P24564	T12YR4	Lower Spine Red Y	Lft	397.12087	g	OK	906n	Endevco
7008	P21652	PEVYG4	Pelvis Accel Y	Lft	397.45998	g	OK	906n	Endevco
7009	P25318	PEVYR4	Pelvis Accel Red Y	Lft	402.78171	g	OK	906n	Endevco
7010	P28241	RFSXG1	RGT SIDE SILL FRNT ST X	FWD	402.43979	g	OK	-1	Endevco
7011	P27498	RFSYG1	RGT SIDE SILL FRNT ST Y	LT	1004.9067	g	OK	-1	Endevco
7012	P27200	RFSZG1	RGT SIDE SILL FRNT ST Z	UP	395.61118	g	OK	-1	Endevco
7013	P27939	RRSXG1	RGT SIDE SILL RR ST X	FWD	398.80358	g	OK	-1	Endevco
7014	P23816	RRSYG1	RGT SIDE SILL RR ST Y	LT	994.56099	g	OK	-1	Endevco
7015	P27913	RRSZG1	RGT SIDE SILL RR ST Z	UP	399.00249	g	OK	-1	Endevco
7016	P28265	RDKXG1	RR FLR PAN ABV AXLE X	RR	1012.0177	g	OK	-1	Endevco
7017	P28119	RDKYG1	RR FLR PAN ABV AXLE Y	LT	1023.5496	g	OK	-1	Endevco
7018	P28081	RDKZG1	RR FLR PAN ABV AXLE Z	UP	1007.7549	g	OK	-1	Endevco
7019	P27173	LRSYG1	LFT SIDE SILL RR ST Y	RT	976.63328	g	OK	-1	Endevco
7020	P29287	LFSYG1	LFT SIDE SILL FRNT ST Y	RT	1536.6146	g	OK	-1	Endevco
7021	P27167	RRTYG1	RGT RR OCP COMP Y	RT	1447.8000	g	OK	-1	Endevco
7022	P22834	LLBYG1	LFT LOWER B-POST Y	RT	1484.9187	g	OK	-1	Endevco
7023	P28313	LUBYG1	LFT MID B-POST Y	RT	1528.9058	g	OK	-1	Endevco
7024	P28618	LLAYG1	LFT LOWER A-POST Y	LT	1476.0998	g	OK	-1	Endevco
7025	P29285	LUAYG1	LFT MID A-POST Y	LT	1512.3320	g	OK	-1	Endevco
7026	P27354	LFTYG1	LFT FRNT ST TRK Y	RT	1551.7972	g	OK	-1	Endevco
7027	P28272	LRTYG1	LFT RR ST TR Y	RT	1478.7430	g	OK	-1	Endevco
7028	P28620	VCGXG1	VEH C/G X	FWD	1000.6253	g	OK	-1	Endevco
7029	P28251	VCGYG1	VEH C/G Y	LT	996.47729	g	OK	-1	Endevco
7030	P25042	VCGZG1	VEH C/G Z	UP	1015.2485	g	OK	-1	Endevco

030924-1

Channel Report

9/24/2003 7:58:43 AM

Name of Test 030924-1

Name of DAU DAU8

System MINIDAU

Chan.#	Sensor #	Mnemonic	Description	Dir.	Range	Pol.	Cal.	Group	Mfg.	Model
8001	P27554	BCGXG1	MDB CG X-AXIS	FWD	810.12658 g	+	7/18/2003	OK -1	Endevco	7264C-2K-2-180
8002	P28109	BCGYG1	MDB CG Y-AXIS	LT	798.10450 g	-	7/19/2003	OK -1	Endevco	7264C-2K-2-180
8003	P27976	BCGZG1	MDB CG Z-AXIS	UP	790.24540 g	-	7/18/2003	OK -1	Endevco	7264C-2K-2-180
8004	P27385	LRRXG1	MDB LT RR X-AXIS	FWD	799.11348 g	+	7/19/2003	OK -1	Endevco	7264C-2K-2-180
8005	P27371	LRRYG1	MDB LT RR Y-AXIS	LT	800.80080 g	-	7/19/2003	OK -1	Endevco	7264C-2K-2-180

page 3 of 3

Digital and System Channel Report

2003-09-24 07:59:01

Name of Test		030924-1	System		MINIDAU	Name of DAU		DAU6	description	
enable Channel		Short Name	Type			Data File			Module Type	
Yes		6501	DIG6		dig0	DAT66501			KM3710 Controller	
bit position	bit	short	long		description					
MSB = bit 15	1	SHLET1	DRIVER SHOULDER CONTACT		1					
bit 14	1	PEVET1	DRIVER PELVIS CONTACT		2					
bit 13	1	SHLET4	PASSENGER SHOULDER CONTACT		3					
bit 12	1	PEVET1	PASSENGER PELVIS CONTACT		4					
bit 11	0									
bit 10	0									
bit 09	0									
bit 08	0									
bit 07	0									
bit 06	0									
bit 05	0									
bit 04	0									
bit 03	0									
bit 02	0									
bit 01	0									
LSB = bit 00	0									

Digital and System Channel Report

2003-09-24 07:59:01

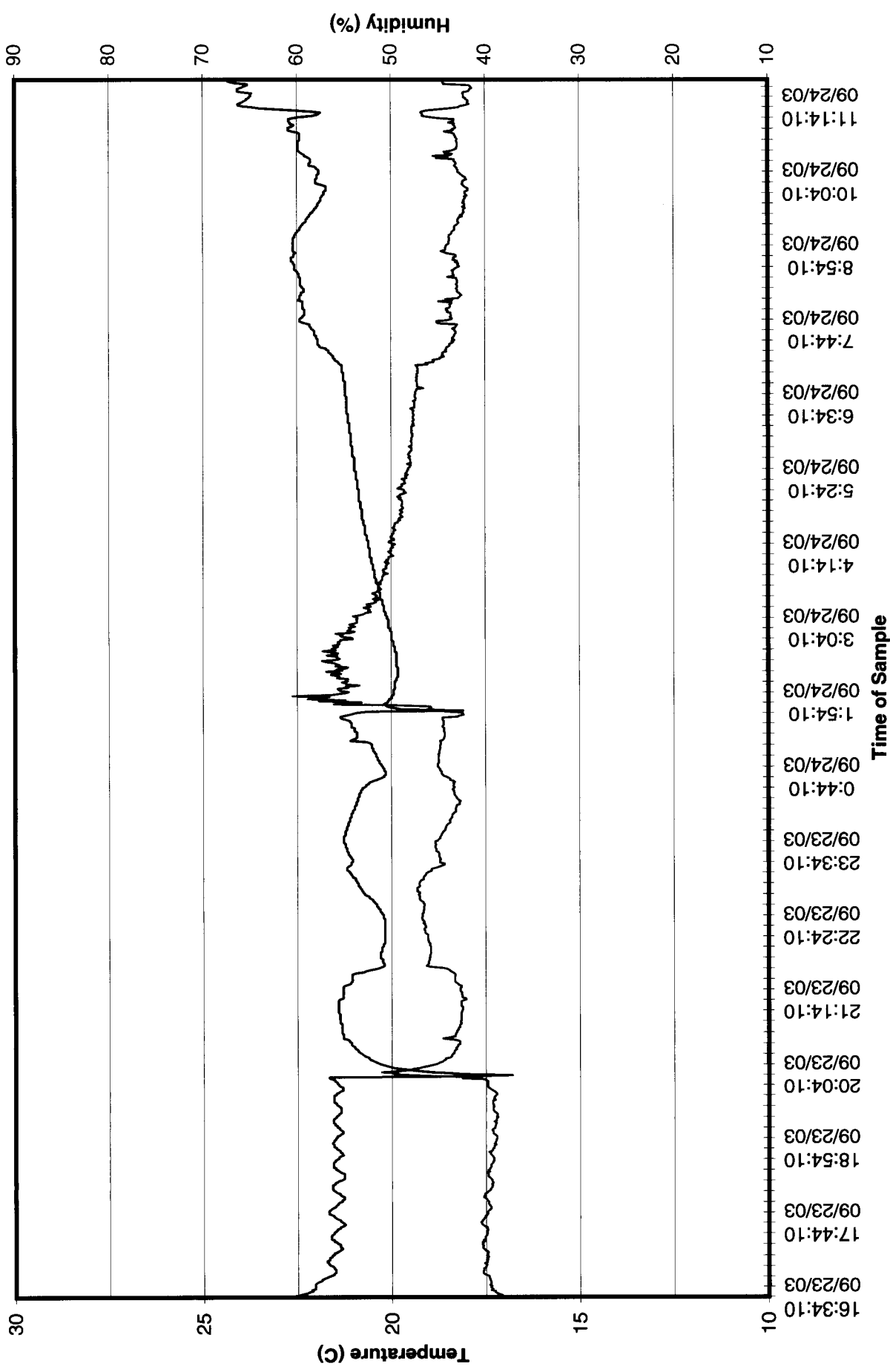
Name of Test		030924-1	System	MINIDAU	Name of DAU		DAU8	description
enable Channel		Short Name	Type	Module Type	Data File		Module Type	
d								
Yes		8501	DIG8	dig0	DAT88501		KM3710 Controller	
bit position	bit	short	long	description				
MSB = bit 15	1	MDBR1	MDB RT SIDE CONTACT SWITCH	1				
bit 14	1	MDBL1	MDB LT SIDE CONTACT SWITCH	2				
bit 13	0							
bit 12	0							
bit 11	0							
bit 10	0							
bit 09	0							
bit 08	0							
bit 07	0							
bit 06	0							
bit 05	0							
bit 04	0							
bit 03	0							
bit 02	0							
bit 01	0							
LSB = bit 00	0							

Dummy	055n	Type	HIII/SID	Description	Manufacturer	Sens./mV/V/	Fullscal	Caldat	Pos Output	Flip
Chsnam	Location	Model	Name							
HEDXG	Head Accel X	7264C-2K-2-18	P25298	Endevco	0.02203	g	2000	9/16/2003	Rwd	1
HEDYG	Head Accel Y	7264C-2K-2-18	P25061	Endevco	0.01811	g	2000	8/22/2003	Lft	1
HEDZG	Head Accel Z	7264C-2K-2-18	P25261	Endevco	0.01723	g	2000	8/22/2003	Up	1
HEDXR	Head Accel X Red	7264C-2K-2-18	P25067	Endevco	0.01634	g	2000	8/22/2003	Rwd	1
HEDYR	Head Accel Y Red	7264C-2K-2-18	P24511	Endevco	0.01752	g	2000	8/22/2003	Lt	1
HEDZR	Head Accel Z Red	7264C-2K-2-18	P25063	Endevco	0.01814	g	2000	8/22/2003	Up	1
NEKXF	Neck Force X	1716	1716-0534-FX	Denton	0.000193247	N	8896.4	9/9/2003	Hd Fd,Cst Rr	1
NEKYF	Neck Force Y	1716	1716-0534-FY	Denton	0.000181781	N	8896.4	9/9/2003	Hd Lt,Cst Rt	0
NEKZF	Neck Force Z	1716	1716-0534-FZ	Denton	0.000087114	N	13344.6	9/9/2003	Hd Up,Cst Dn	0
NEKXM	Neck Moment X	1716	1716-0534-MX	Denton	0.00588708	N	282.5	9/9/2003	Rt Ear to Rt Shld	1
NEKYM	Neck Moment Y	1716	1716-0534-MY	Denton	0.005773451	N	282.5	9/9/2003	Chn to Strmm	0
NEKZM	Neck Moment Z	1716	1716-0534-MZ	Denton	0.00839115	N	282.5	9/9/2003	Chn to Lt Shld	0
LURYG	Left Upper Rib Y	7264C-2K-2-18	P25068	Endevco	0.01741	g	2000	8/22/2003	Rgt	0
LURYR	Left Upper Rib Red Y	7264C-2K-2-18	P25069	Endevco	0.01712	g	2000	8/22/2003	Rgt	0
LLRYG	Left Lower Rib Y	7264C-2K-2-18	P25305	Endevco	0.02057	g	2000	8/22/2003	Rgt	0
LLRYR	Left Lower Rib Red Y	7264C-2K-2-18	P25395	Endevco	0.02048	g	2000	8/25/2003	Rgt	0
T12YG	Lower Spine Y	7264C-2K-2-18	P24393	Endevco	0.01986	g	2000	9/9/2003	Lft	1
T12YR	Lower Spine Red Y	7264C-2K-2-18	P24627	Endevco	0.01845	g	2000	8/25/2003	Lft	1
PEVYG	Pelvis Accel Y	7264C-2K-2-18	P25397	Endevco	0.01836	g	2000	8/25/2003	Lft	1
PEVYR	Pelvis Accel Red Y	7264C-2K-2-18	P25231	Endevco	0.01781	g	2000	9/9/2003	Lft	1

Dummy 906n Type HIII/SID Description NHTSA - 906n SID-LEFT IMP. CONFIG. w/RED ACCELS ICAL'd 9-9-03(DKS)

Chsnam	Location	Model	Name	Manufacturer	Sens./mV/V/	Fullscal	Caldat	Pos Output	Flip
HEDXG	Head Accel X	7264-2000TZ	J26885	Endevco	0.02361 g	2000	9/9/2003	Rwd	1
HEDYG	Head Accel Y	7264-2000TZ	J26864	Endevco	0.02398 g	2000	9/9/2003	Lft	1
HEDZG	Head Accel Z	7264-2000TZ	J27950	Endevco	0.02586 g	2000	9/9/2003	Up	1
HEDXR	Head Accel X Red	7264-2000TZ	J27271	Endevco	0.03201 g	2000	9/9/2003	Rwd	1
HEDYR	Head Accel Y Red	7264-2000TZ	J27283	Endevco	0.02344 g	2000	9/9/2003	Lt	1
HEDZR	Head Accel Z Red	7264-2000TZ	J26980	Endevco	0.03088 g	2000	9/9/2003	Up	1
NEKXF	Neck Force X	1716A	1716A-1535-FX	Denton	0.000186952 N	8896.4	9/9/2003	Hd Fd,Cst Rr	1
NEKYF	Neck Force Y	1716A	1716A-1535-FY	Denton	0.000179612 N	8896.4	9/9/2003	Hd Lt,Cst Rt	0
NEKZF	Neck Force Z	1716A	1716A-1535-FZ	Denton	0.000093678 N	13344.6	9/9/2003	Hd Up,Cst Dn	0
NEKXM	Neck Moment X	1716A	1716A-1535-MX	Denton	0.005785841 N	282.5	9/9/2003	Rt Ear to Rt Shld	1
NEKYM	Neck Moment Y	1716A	1716A-1535-MY	Denton	0.00568 N	282.5	9/9/2003	Chn to Strmm	0
NEKZM	Neck Moment Z	1716A	1716A-1535-MZ	Denton	0.008186195 N	282.5	9/9/2003	Chn to Lt Shld	0
LURYG	Left Upper Rib Y	7264C-2K-2-18	P27850	Endevco	0.01795 g	2000	9/9/2003	Rgt	0
LURYR	Left Upper Rib Red Y	7264C-2K-2-18	P25374	Endevco	0.02209 g	2000	9/9/2003	Rgt	0
LLRYG	Left Lower Rib Y	7264C-2K-2-18	P29211	Endevco	0.02096 g	2000	9/9/2003	Rgt	0
LLRYR	Left Lower Rib Red Y	7264C-2K-2-18	P25075	Endevco	0.01784 g	2000	9/9/2003	Rgt	0
T12YG	Lower Spine Y	7264C-2K-2-18	P21635	Endevco	0.01895 g	2000	9/9/2003	Lft	1
T12YR	Lower Spine Red Y	7264C-2K-2-18	P24564	Endevco	0.01896 g	2000	9/9/2003	Lft	1
PEVYG	Pelvis Accel Y	7264C-2K-2-18	P21652	Endevco	0.02221 g	2000	9/9/2003	Lft	1
PEVYR	Pelvis Accel Red Y	7264C-2K-2-18	P25318	Endevco	0.01926 g	2000	9/15/2003	Lft	1

FMVSS 214 SIDE IMPACT PROTECTION C45101 / 030924-1





SIDE IMPACTOR BARRIER CERTIFICATION

Date: May 13, 2003
To: Transportation Research
Ship & Rec Bldg 50
10820 St. Route 347
East Liberty, OH 43319-0367

PURCHASE ORDER INFORMATION

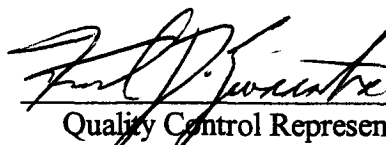
Customer P.O. Number: 23413
Work Order Number: 16765
Quantity: 01 piece

CORE INFORMATION

Core Type: PCGA-1/4-5.2-P-3003-T
Measured Cell Size: 0.250 inches
Measured Density: 5.2 pcf

Unit Number: 033A0303

This is to certify that the aluminum honeycomb core supplied, under the unit number provided, meets the crush requirements of 232 – 250 psi as per DWG# DSL-1285.


Quality Control Representative
Karl D. Zwaanstra



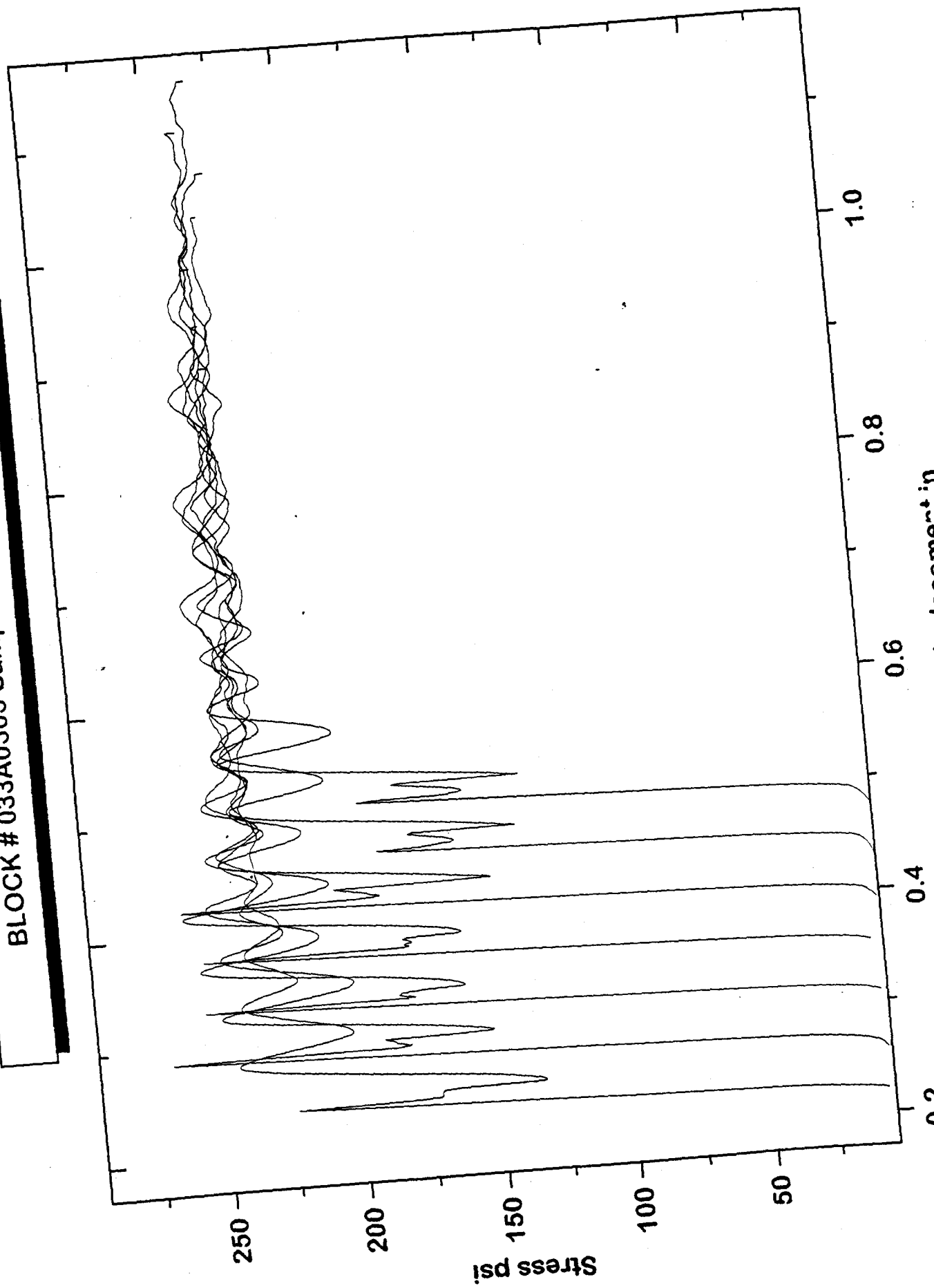


Crush Data
232 - 250 psi per DWG # DSL-1285

Block Number: 033A0303

<u>Specimen Number</u>	<u>Zone 1</u>	<u>Zone 2</u>	<u>Zone 3</u>
1	233.68	234.43	234.32
2	234.84	233.99	234.70
3	241.15	240.58	242.00
4	235.55	234.70	234.32
5	243.22	239.09	237.67
6	236.93	237.02	238.13
7	237.94	240.08	237.33

BLOCK # 033A0303 Sample ID: IN267010





SIDE IMPACTOR BARRIER CERTIFICATION

Date: May 13, 2003
To: Transportation Research
Ship & Rec Bldg 50
10820 St. Route 347
East Liberty, OH 43319-0367

PURCHASE ORDER INFORMATION

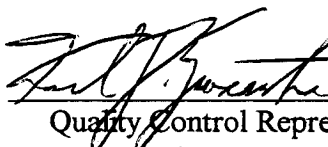
Customer P.O. Number: 23413
Work Order Number: 16765
Quantity: 01 piece

CORE INFORMATION

Core Type: PAMG-3/8-1.6-001-P-5052-T
Measured Cell Size: 0.375 inches
Measured Density: 1.6 pcf

Unit Number: 024A0403

This is to certify that the aluminum honeycomb core supplied, under the unit number provided, meets the crush requirements of 45 psi +/- 2.5 psi as per DWG# DSL-1285.


Quality Control Representative
Karl D. Zwaanstra



Crush Data

45 psi +/- 2.5 psi per DWG # DSL-1285

Block Number: 024A0403

<u>Specimen Number</u>	<u>Zone 1</u>	<u>Zone 2</u>	<u>Zone 3</u>
1	44.04	43.50	44.74
2	47.22	47.11	46.31
3	45.50	45.66	45.35
4	45.47	46.98	46.34
5	47.25	46.24	45.37
6	44.54	44.24	43.37
7	44.12	43.94	42.84

BLOCK # 024A0403 Sample ID: IN227200

